

STRICTURE OF THE URETHRA,

ITS

PATHOLOGY AND TREATMENT;

COMPRISING

OBSERVATIONS ON THE CURATIVE POWERS

OF THE

POTASSA FUSA

IN THAT DISEASE;

WITH CASES.

BY ROBERT WADE, F.R.C.S.,

SENIOR SURGEON TO THE WESTMINSTER GENERAL DISPENSARY; FELLOW OF
THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY; AND
LATE LECTURER ON PATHOLOGICAL ANATOMY.



SECOND EDITION, GREATLY ENLARGED.

LONDON:

JOHN CHURCHILL, PRINCES STREET, SOHO.

MDCCCXLIX.

LONDON :

PRINTED BY G. J. PALMER, SAVOY STREET, STRAND.

P R E F A C E

TO THE SECOND EDITION.

It was not until after many years experience of its good effects that I ventured to recommend the revival of the potassa fusa in the treatment of Stricture of the Urethra, and more extensive observation, has since fully confirmed my opinion of the great value of the remedy in many troublesome forms of urethral obstruction. As each working bee adds its little store of honey to the hive, so may every one amongst us, with but a common share of industry and observation, contribute some little, if it be but an atom, to the great mass of knowledge which has been piled up by the accumulated treasures of individual labour, by which, surgery, from a mere mechanical art, has been raised to an eminently useful and noble science. In placing before

the profession a second edition of my work on Stricture, I have added the results of a further experience of eight years in the treatment of that disease. As there still exists more or less prejudice against the employment of caustic of any kind in strictures of the urethra, and, as one principle object of my former publication was to excite attention to the great advantage to be derived from the potassa fusa in their removal, I have thought it desirable to give some additional cases illustrative of the effects of the caustic potash. A great part of these have been selected from those treated by me during the last year. I have also endeavoured to make this edition a more complete Treatise on Stricture than the former; for, with the exception of the anatomy of the parts concerned in that disease, which can be properly acquired only from dissection, and by taking advantage of every legitimate opportunity for the introduction of instruments, the student, I hope, will find that no practical point of importance has been omitted.

London, 68, Dean Street, Soho Square,

June 10th, 1849.

P R E F A C E

TO THE FIRST EDITION.

HAVING had repeated opportunities of witnessing the admirable effects of the potassa fusa in the treatment of Stricture of the Urethra, I am desirous of calling the attention of the profession to a remedy, whose powers in that disease appear to me to be but little known or appreciated by modern surgeons. It is not until after more than twelve years' extensive appearance of its good effects, that I now venture to recommend the potassa fusa as a remedy of singular power and efficacy in the cure of stricture of the urethra. To avoid all misunderstanding of my views with regard to the employment of the potassa fusa in stricture, I have thought it best to give a general

practical description of the disease in its various forms and stages, with their appropriate treatment. I am induced also to hope that a faithful description of the practical difficulties that occur in the management of stricture, may not prove unacceptable to the young surgeon.

I cannot conclude without paying a cordial tribute to the memory of the late Mr. Whately; for, although my views differ very considerably from those of that gentleman, yet to him must be entirely ascribed the merit of having been the first to point out the powers of the potassa fusa in stricture. If the remedy be employed in the manner and with the perseverance recommended in the following observations, I believe that instances of its failure will be comparatively of rare occurrence.

London, 68, Dean Street, Soho Square,
October 25th, 1840.

CONTENTS.

PART I.

	Page
Preface to Second Edition	v
Preface to First Edition	vii
General observations on stricture	1
Pathology of particular kinds of stricture	18
Dilatable stricture	<i>ib.</i>
Simple chronic stricture	<i>ib.</i>
Impassable stricture	19
Irritable stricture	<i>ib.</i>
Inflammatory stricture	20
Stricture with marked disposition to contraction	21
Spasmodic stricture	<i>ib.</i>
Stricture from injury to the urethra	24
Symptoms of stricture	26
Use of bougies	33
—— catheters and sounds	35
—— caustics	36
—— nitrate of silver	37
—— potassa fusa	<i>ib.</i>
Effects of the potassa fusa	42
Method of applying the potassa fusa	44
Cases in which the potassa fusa may be used with advantage	46
Directions for the introduction of sounds and catheters	47

	Page
Effects of the bougie upon strictures . . .	52
Treatment of dilatable stricture . . .	55
————— simple chronic stricture . . .	57
————— impassable stricture . . .	66
————— irritable stricture . . .	76
————— inflammatory stricture . . .	82
————— stricture with marked disposition to con- traction	84
————— spasmodic stricture . . .	<i>ib.</i>
————— stricture from injury to the urethra . .	85
————— retention of urine . . .	88
————— ruptured urethra . . .	94
————— urinary fistula . . .	96
————— inflammation of the testes . . .	97
————— hæmorrhage from the urethra . . .	100
————— false passages . . .	104
————— ulcers on the glans and prepuce . . .	106
————— gleet	107

CASES.

Impassable stricture	113
Impassable stricture, with retention of urine . .	114
Impassable stricture, with retention of urine . .	116
Irritable stricture, with chronic enlargement of the testis .	117
Irritable stricture	118
Impassable irritable stricture	119
Impassable stricture	121
Inflammatory spasmodic stricture	123
Impassable stricture from injury to the urethra . .	<i>ib.</i>
Impassable stricture	125
Impassable stricture	127
Impassable irritable stricture	128
Impassable stricture	129
Impassable stricture	130
Impassable stricture, with anasarea and albuminous urine	132

	Page
Impassable stricture, with retention of urine	134
Irritable stricture	136
Irritable stricture, in which the introduction of instruments caused great constitutional disturbance	137
Impassable stricture	138
Irritable stricture	139
Impassable stricture	140
Impassable stricture	141
Impassable stricture	142
Irritable stricture	<i>ib.</i>
Impassable stricture	143
Impassable irritable stricture	144
Impassable stricture, with fistulæ in perinco	146

PART II.

Further observations on the employment of the potassa fusa in stricture of the urethra	153
On the treatment of strictures by retention of the catheter or bougie	173
On the operations for division of stricture and puncture of the bladder	185
On the most frequent seat of stricture and false passages	196
On the liability of stricture-patients to a recurrence of their disease	200
A few parting words to the student	208

CASES.

Irritable impassable stricture, treated by the potassa fusa	209
Old stricture impervious to instruments; with a false passage	212

	Page
Irritable hæmorrhagic stricture, treated with potassa fusa	214
Stricture from injury of the perineum, impassable to instruments, treated with potassa fusa	215
Hard impassable stricture treated with the potassa fusa .	217
Impassable stricture treated with the potassa fusa .	218
Irritable stricture removed by the potassa fusa	219
Retention of urine from stricture, with enlarged prostate, &c. Dilatation by retention of the catheter .	221
Irritable stricture removed by two applications of the potassa fusa	224
Irritable stricture removed by the potassa fusa after failure with the nitrate of silver.	225
Return of a stricture from the patient's neglect to continue the occasional introduction of the bougie	228
Stricture, treated by retention of the catheter	229
Return of an impassable stricture from discontinuing the use of the bougie before the disease had been half cured; treated by the potassa fusa	230
Retention of urine from a neglected stricture of forty years' duration. Puncture of the bladder	232
Irritable strictures, treated with potassa fusa	235
Impassable stricture, treated with the potassa fusa	237
Impassable gristly stricture, treated by the potassa fusa .	240
Stricture, causing retention of urine, treated by the potassa fusa	245

ON
STRICTURE OF THE URETHRA.

CHAPTER I.

GENERAL OBSERVATIONS.

THE term stricture, in surgical language, implies a morbid obstruction in some of the ducts or canals of the human body, either of a transient nature, arising from irregular muscular contraction; or of a less temporary character, from some alteration of structure in the part affected. The urethra is peculiarly liable to both kinds of obstruction: the former is called spasmodic; the latter, permanent, stricture. In permanent strictures, various degrees of condensation of the lining membrane of the urethra and subjacent textures are observed impairing or destroying, more or less, the normal elasticity of the canal. Sometimes, the stricture consists of a narrow white band, extending entirely, or

partly, round the urethra ; not always, however, in a circular manner, but, sometimes, nearly in a straight direction. This has been called the bridle stricture, and was said, by Mr. Hunter, to resemble a thread tied round the urethra. Sometimes, again, the obstruction has the appearance of a piece of whipcord encircling the urethra, called, by Sir A. Cooper, the corded stricture. In some cases, a flat circular band, extending an inch or more along the canal, is observed, forming the ribbon stricture of the same author.

The alteration of structure, in some instances, seems to be confined to the mucous membrane ; but, generally, the subjacent cellular texture is more or less condensed ; and should the disease have continued for any length of time, the elastic tissue will, most probably, be found to have lost its healthy elasticity. In old cases, the cells of the corpus spongiosum frequently become obliterated to some extent, forming a hard gristly mass at the seat of disease. This hardness may embrace an inch or more of the canal ; and often, from its irregularity, when an instrument is passed through the stricture, the diseased part feels rugged and cartilaginous. Considerable hardness and irregularity may, however, be produced by condensation of the elastic tissue, without any disease of the corpus spongiosum. When the hardness is an inch or more

in extent, it has been supposed that there were originally two strictures, and that the portion of the urethra between them had become contracted and thickened from continued inflammation.

The urethra, at its strictured portion, has been compared to a double funnel; the funnel shape is, however, observed chiefly behind the stricture, which part of the urethra is often considerably dilated. The mucous membrane, immediately anterior to the obstruction, has a corrugated appearance. The lining membrane, at the seat of stricture, is usually in a state of chronic inflammation or congestion, possessing augmented sensibility, as is evidenced on pressure, and frequently by bleeding, when only gently touched by the bougie. When a stricture is sufficient to cause much impediment to the flow of urine, the urethra behind it becomes generally, but not always, gradually dilated, and more or less thickened from continued inflammation: in which state, ulceration may very probably occur; or the canal may be suddenly ruptured by the powerful expulsive efforts of the bladder. In many such cases, it fortunately happens that the cellular membrane surrounding the strictured portion of the canal has been previously condensed by effused lymph, which forms a firm barrier around the breach; oftentimes, indeed, proving the only salvation of the

patient, by preventing extravasation of urine. The consequences, however, are far different, should the cellular membrane around the ruptured urethra be free and uncondensed; for then, the urine, urged onward by a bladder, often increased tenfold in power, acting spasmodically at the time, quickly infiltrates that tissue, and is directed by the superficial fascia upwards and forwards, distending the scrotum and integuments of the penis, and frequently extending even to the inguinal regions, and above the pubes. Under such circumstances, the pitiable sufferer, who has, perhaps, been previously for many hours in agony, experiences instant relief, becomes quite tranquil, and most probably falls asleep, unconscious of his impending destruction. His tranquillity is, however, evanescent; for, without prompt and efficient surgical aid, it must, indeed, be by a lucky chance only, should he escape from the extreme peril of his situation. And, even with all the resources of surgical science, the event is extremely doubtful. In such cases, time is, indeed, most precious, as every moment's delay after the urethra has burst most certainly diminishes the patient's chances of recovery. The effused urine quickly destroys the cellular membrane; sloughing soon follows; and more than common vigour of constitution is required to survive the shock.

The symptoms of this deplorable state are of the low typhoid character, the brain and nervous system very early indicating greatly depressed powers ; perhaps, in some degree, arising from absorption of the highly acrid and putrid urine. A black spot is sometimes observed upon the glans penis, which is a sign of effusion of urine into the corpus spongiosum. Some encouragement is, however, afforded to the unfortunate sufferer under this terrible infliction ; for, certainly, extraordinary recoveries have taken place after most extensive destruction of tissue. In many cases, in consequence of irritation caused by the stricture, the cellular membrane external to the urethra becomes inflamed, and an abscess forms ; or the same thing may happen from the escape of a drop or two of urine into the cellular tissue from a small ulcerated opening. Such an abscess, if left to itself, will probably open externally in the perineum ; but its contents may be discharged into the urethra or rectum. Although no communication exist between the urethra and abscess in the early stage of the disease, yet during its progress it is highly probable that such a communication may be formed ; in which case, should the pus issue by the rectum or perineum, fistulous openings must be expected. In extensive extravasation of urine, fistulæ are sometimes formed above the pubes, or in the groin.

These fistulæ generally afford great relief to the patient so long as they remain open ; his sufferings, if not entirely relieved, are very much diminished, as the greater part of the urine often passes by the preternatural channels. The great pressure of urine against the obstruction being consequently materially lessened, as well as the strain upon the bladder, the inflammation and irritation of the stricture are commonly so much relieved as to offer a highly favourable opportunity for restoring the integrity of the canal. Such an opportunity should never be neglected ; indeed, the future comfort, and perhaps life, of the patient are in the hands of his surgeon ; for, whilst the urine finds a free escape behind the stricture, safe and efficient means can invariably be adopted for the removal of the disease. As the urine finds a more free passage through the stricture, the fistulous opening or openings will probably close ; when, unless effectual means be adopted to remove the obstruction, another abscess and fistula may be expected to form. Thus, urinary abscesses may form successively ; indeed, it is not uncommon to find as many as four or five external openings with fistulous tracks winding their way along a hardened mass of condensed cellular tissue, and communicating, directly or indirectly, with the urethra. In aggravated and protracted cases of stricture, the whole urinary

apparatus behind the obstruction is frequently more or less diseased. A calculus may lodge in the urethra behind its strictured part and the bladder; and, occasionally, this portion of the canal has been found studded with tubercles, or encrusted with lymph and calcareous matter. Inflammation may creep along the ejaculatory ducts to the testicle, and cause considerable enlargement of that organ, which is often attended with such a scirrhus-like hardness as to have led to the supposition of the presence of malignant disease. The ducts of the prostate are frequently so much dilated as to admit the point of a good-sized bougie; and the gland itself is generally diseased, being either much hardened and enlarged, or disorganised by abscesses. In some cases, however, the prostate is much softened.

In a man of extremely intemperate habits, who died from rupture of the urethra at the age of 40, having suffered more or less from stricture half his life, I found the prostate of the size of a French walnut, of a dark chocolate colour, studded with patches of effused lymph, and so soft as to be broken up by very slight pressure. In narrow strictures of long continuance, the bladder usually becomes much thickened,—sometimes to the extent of a quarter of an inch or more,—chiefly from hypertrophy of its muscular coat, caused by the increased and powerful efforts re-

quired for the expulsion of the urine ; the mucous and submucous tissues, are, however, also condensed, and the cavity of the bladder becomes, at the same time, generally contracted. The mucous membrane of the bladder commonly exhibits traces of long-continued chronic inflammation, being usually much thickened, of a dirty yellow, light brown, or slate colour, with injected vessels in spots or streaks ; and, occasionally purple or black gangrenous patches. The interior of the bladder sometimes strikingly resembles dark gray marble, partially veined with red. When examined with the microscope, the red parts are observed to consist of highly-injected vessels with ecchymosed patches. In the gangrenous portions no distinct vessels can be seen ; but in others of a dark brown hue, occasional ramifications of a deep purple colour are visible. The peritoneal coat is also in many cases thickened, and has sometimes patches of lymph on its surface, with a highly vascular appearance, commonly caused by the minute injection of vessels in the sub-serous cellular tissue ; the smaller ramifications being of a bright red, and the larger of a dark purple colour. From the powerful action acquired by the bladder, pouches are sometimes formed in it, from the mucous coat having been forced between the fibres of the detrusor. The openings of these pouches are usually small, and besides vitiated mucus, which

in bad cases of stricture is often secreted in considerable quantity,—probably from the whole or greater part of the mucous membrane of the urinary apparatus behind the obstruction,—calculous concretions are occasionally contained in the pouches. The bladder has been said to have burst from distension of urine in consequence of stricture, but such an occurrence must be regarded as extremely rare; for the urethra is almost certain to give way before the bladder. The possibility of the bladder being burst from stricture of the urethra must, however, be admitted, on the authority of Sir B. Brodie, who mentions such a calamity as having happened many years ago to a patient in St. George's Hospital. The ureters and pelves of the kidneys may become dilated to a great extent, the glandular structure of the latter being considerably atrophied.

Various other changes in the kidneys, effects of inflammation or congestion, are observed: sometimes they are much softened, of a deep purple colour; and when incised, a serous fluid freely spurts out. A disease first described by Mr. Guthrie, in his excellent work on Diseases of the Bladder and Urethra, as “the chronic thickening of the neck of the bladder,” I have found, occasionally, to accompany stricture at the bulb, or membranous portion of the urethra. In two cases which have lately fallen under my

care, in which great difficulty in micturition, combined with incontinent dribbling of urine, had long been experienced, especially during the night, I found, after having succeeded in getting an instrument through a hard stricture at the bulb, that a second obstacle presented itself at the neck of the bladder quite as difficult to overcome as the first. This obstruction, which felt rigid, yielded very slowly to the introduction of steel sounds, with an occasional application of the potassa fusa. Although at first inclined to attribute the obstruction to some enlargement of the prostate; yet, from the circumstance of the patients having in both instances completely recovered, I have now but little doubt that the obstacle at the orifice of the bladder arose from the disease so clearly described by Mr. Guthrie. That gentleman has satisfactorily established, that, without any affection of the prostate, “the elastic tissue at the neck of the bladder may be diseased, forming a bar or dam, preventing the free evacuation of the urine.”

Of the nature of stricture of the urethra, different views have been entertained. Mr. Hunter, Sir E. Home, Mr. Wilson, and those who believed in the muscularity of the urethra, attributed the disease to a wrong action of some of the muscular fibres surrounding the canal. Sir C. Bell, Mr. Shaw, and others, have entirely denied the muscularity of the urethra; and, consequently, rejected Mr.

Hunter's explanation of the pathology of stricture. Never having been able to detect anything like muscular fibres in that part of the urethra anterior to the bulb, surrounded by the corpus spongiosum, in which part strictures frequently take place, I cannot suppose that muscular action is either necessary or generally much concerned in their formation. Morbid anatomy affords indisputable proof of inflammation in all cases of permanent stricture ; and in the various stages of inflammation we have a most satisfactory explanation of the whole phenomena of the disease in question. As far as my own observations have gone, they fully confirm the opinions of those who regard inflammation as the cause of permanent stricture of the urethra. These opinions are corroborated by an examination of strictures of the alimentary canal, which evidently arise from inflammatory condensation ; with the exception of those produced by mechanical obstructions, carcinomatous or other morbid deposits. Such morbid depositions affecting the parietes of the urethra, and diminishing its calibre, are, I believe, of rare occurrence. If it be admitted that inflammation is generally the cause of strictures, we are naturally led to inquire why they should be of so much more frequent occurrence in the urethra than in the alimentary canal, which, from its great length, might be imagined as peculiarly predisposed to such affec-

tions. The circumstance of the male urethra being the seat of gonorrhœa appears to be a sufficiently satisfactory answer to the question, for young men are generally the subjects of both diseases. It is my belief that gonorrhœal inflammation is the foundation of the greater number of strictures of the urethra; more especially when, from neglect or other causes, it has remained for some length of time in a chronic state in the form of gleet. That strictures of the urethra do not, however, in many cases arise from specific, but are produced by common inflammation, is evident from their occasional occurrence before the age of puberty, and where no gonorrhœa had previously existed. Besides, as common inflammation causes stricture in other canals, a fact which cannot well be denied, there can be no sufficient reason why it should not do so sometimes in the urethra. We generally find that the subjects of stricture of the urethra have, previous to the occurrence of the disease, been affected with gonorrhœa, probably in a protracted form; and although such a sequence does not necessarily establish the identity of the two diseases, the supposition is certainly strengthened by the far greater frequency of morbid thickenings in the male urethra than in other canals. A question of much practical importance here occurs. Are strictures more likely to follow gonorrhœa when injections have been used in its

treatment, or when they have not? This question cannot probably be answered in that satisfactory manner required to produce conviction in the minds of others. As, however, it is an every-day occurrence for strictures to form after gonorrhœa when no injections have been used; and as contractions of the urethra generally result from continued chronic inflammation, it seems to me, that instead of rejecting the use of astringent remedies as the cause of such contractions, they may reasonably be used for their prevention. That strictures may be caused by the injudicious use of injections in the early and acute stage of gonorrhœa is highly probable; but such a practice often proves injurious in so many respects, that no man of much experience is likely to adopt it. When injections are used in the chronic stage of gonorrhœa, after the pain caused by the urine in passing over the inflamed part of the urethra has entirely or nearly subsided, they will generally be found very effectual in curing the disease. It surely then may be inferred that injections, when used with proper precaution, are more likely to prevent than cause stricture. It has been debated whether scrofulous persons are more liable than others to stricture of the urethra. I may merely observe, that so far as my experience has gone, it certainly has not appeared to me that scrofulous inflammation has at all predisposed to stricture.

This opinion might appear rather inconsistent with a previous assertion, that a continued gleet may often be traced as the origin of stricture, did not the circumstance of the less tendency to the effusion and subsequent organization of lymph in serofulous than healthy subjects, sufficiently account for the apparent inconsistency.

Stricture occasionally, although very rarely, occurs in the female urethra. Stricture may occur at all ages; but very rarely takes place before the age of puberty. The healthy urethra possesses great elasticity, and it is the diminution of this elasticity from inflammation in some part of its course, preventing the free dilatation of the canal during the action of the bladder, which forms the early stage of stricture. In this stage, it is most probable, that a slight effusion of lymph has taken, or will soon take place, causing preternatural adhesion of the lining membrane to the submucous cellular tissue of the urethra. In this state, a bougie introduced, of the full size of the orifice of the urethra, will meet with more or less obstruction in some part of its course, giving more pain at that particular part than at others. A stricture of this kind may remain nearly in the same condition without any perceptible increase; perhaps for months; and may probably be removed by a few introductions of the bougie. It is to such a stricture that the term dilatable has been applied; although, with

strict propriety, the same appellation might be affixed to others of a more serious nature; to any, in fact, where the urethra can be restored to its original integrity. The term dilatable stricture, however, as generally used, implies one possessing but slight irritability, in which the healthy elasticity of the canal is only impaired, not lost, so that its dilatation is soon effected. When the strictured portion of the urethra has become condensed and rigid, its proper dilatation can then only be slowly accomplished.

From an attentive consideration of the whole of the circumstances connected with permanent stricture, it may surely be inferred, that to continued inflammation, subacute or chronic, the disease is commonly to be ascribed, with the exception of those obstructions caused by calculi, enlarged prostate, or other tumors encroaching upon the urethra. The conclusion naturally follows, that whatever causes inflammation of the urethra may eventually give rise to stricture.

The causes which chiefly tend to the production of strictures of the urethra, may be conveniently placed in the order of their degree of liability to produce the disease. Firstly, Protracted gonorrhœa;—Secondly, continued chronic urethral inflammation in persons possessing an irritable urethra;—Thirdly, the continued discharge of unhealthy urine containing the lithates or phosphates in excess;—Fourthly,

calculi, or other causes producing irritation and inflammation of the kidneys, ureters, or bladder, subsequently extending to the urethra;—Fifthly, external or internal injuries, and tumors.

There is no part of the urethra in which stricture may not occur; but certain parts of the canal are more frequently obstructed than others. As might naturally be expected, much difference of opinion prevails upon the particular site of the urethra most predisposed to stricture, each observer being very likely to arrive at a conclusion upon this point solely from his own experience. Judging from my own observation I should describe the parts of the urethra most predisposed to stricture in the following order:—Firstly, the posterior part of the bulb at its junction with the membranous portion;—Secondly, the commencement of the bulbous portion;—Thirdly, the membranous part;—Fourthly, the corpus spongiosum anterior to the bulb; Fifthly, the band or bar at the orifice of the bladder. It is probable that those parts of the urethra the most vascular and irritable are more predisposed than others to stricture.

Although it can scarcely admit of doubt that slight strictures of the urethra may occasionally subside on the disappearance of the inflammation which caused them, without the introduction of instruments; yet certainly their ordinary course is to progressively increase, unless

proper means be adopted for their removal. When once a stricture is fairly established by a thickening of some part of the urethra, its tendency to increase is in a great degree explained, by the irritation caused by the frequent pressure of the urine against it, which pressure becomes greater as the obstruction advances, from the additional power acquired by the bladder. The sexual functions performed by the urethra, subjecting it to frequent determination of blood, must also add to any irritation existing in that canal. As many as four or five strictures may occur in the same individual; but there are seldom more than two or three.

Stricture of the urethra, when fully established, and allowed to pursue its natural course without the interference of the surgeon, must undoubtedly be regarded as a disease, tending greatly to the destruction of life; a fact which both the patient as well as his surgical adviser will do well to bear in mind.

CHAPTER II.

PATHOLOGY OF PARTICULAR KINDS
OF STRICTURE.

STRICTURES of the urethra, for practical purposes, may be classed under the following heads :—The dilatable stricture ;—2. The simple chronic stricture ;—3. The impassable stricture ;—4. The irritable stricture ;—5. The inflammatory stricture ;—6. The stricture with marked disposition to contraction ;—7. The spasmodic stricture ;—8. The stricture from external or internal injury.

The nature of the 1st, or *dilatable stricture*, has been previously explained in the general pathology of the disease.

2. *Simple chronic stricture*.—In the dilatable stricture, it will be recollected that the elasticity of the urethra is slightly impaired in some part of its course, from chronic inflammation ; probably with the effusion of a small quantity of coagulated lymph. In the stricture now to be

considered, the mischief has gone further ; and more or less alteration of structure has taken place ; the parietes of the urethra having become thickened at the seat of disease. It must consequently be expected that the removal of such a stricture will not be so readily effected as the one previously described, the necessary absorption, or removal of the thickened tissue, rendering the cure of the latter more protracted.

3. *Impassable stricture*.—When a stricture is impervious to instruments, it is called an impassable one. The obstruction may be so complete as to prevent any urine passing along the urethra ; in which case, for the preservation of life, either nature or art must establish an extra outlet for its escape. The obstruction, however, in these strictures is seldom so complete as to prevent the urine trickling through them, and passing partly, if not entirely, by its natural channel, either in drops, or in a very small thread-like stream.

4. *Irritable stricture*.—This stricture is generally highly sensitive as well as vascular, and is consequently disposed to bleed from very slight pressure ; and more or less pain is felt when an instrument is passed through it. The urine, when passing over a stricture of this kind, generally causes a sensation of heat, or scalding, sometimes so painful that the patient dreads the act of micturition ; rigors are apt to occur occasionally,

especially after the introduction of instruments. Irritable strictures are usually observed either in persons whose digestive organs are in an unhealthy state, or in those whose general health has been impaired by residence in warm climates; or who have been accustomed to indulgence in the pleasures of the table, by which a high degree of excitability of the nervous system has been produced. In the lower classes of society, the irritability is most frequently brought on by the use of ardent spirits. An irritable stricture, if under the influence of muscular action, is much disposed to spasm; and if in a situation where there are no muscles, the irritation caused by the pressure of an instrument is often sufficient to occasion such a distension of the vessels of the corpus spongiosum around the obstruction, and of the lining membrane at the seat of disease, as frequently, for a short time, to obstruct entirely the passage of the urine.

5. By *inflammatory stricture* is implied a stricture caused by acute inflammation of some part of the urethra; most frequently from the extension of gonorrhœal inflammation to the posterior part of the urinary canal inducing a swollen state of its lining membrane, with generally more or less spasm of the surrounding muscles. The same phenomena may, however, be produced from other causes, as external or internal injury.

6. *Stricture with marked disposition to contraction.*—There are some strictures which are sure to return if left to themselves, although, a full-sized instrument can be passed into the bladder; and there are others which cannot be dilated to the size of the healthy urethra, that are equally certain to become more contracted, unless kept open by the occasional introduction of instruments. Such strictures, which may properly be termed incurable, are in general hard, and often extensive; and the patient must make up his mind to submit to the trivial inconvenience of an occasional introduction of instruments.

7. *Spasmodic stricture.*—This term should be confined to an obstruction at the bulbous or membranous portions of the urethra from involuntary contraction of a muscle or muscles surrounding that canal. By many persons, however, it is supposed that spasm may occur in any part of the urethra. This mistake appears to have arisen from the circumstance of a bougie having been grasped by strictures in all parts of the canal; an occurrence which has been accounted for by the presumed muscularity of the urethra. If muscular fibres exist at all in the urethra, anterior to the part surrounded by the accelerator urinæ, they must be admitted to be so small, that many very acute observers have been unable to detect them; and it surely requires some stretch of the imagination to

attribute to such wonderfully minute fibres so firm a grasp of a bougie. That it is a common occurrence for an instrument to be tightly embraced by strictures anterior to the accelerator, cannot be denied; but surely such an occurrence, without resorting to hypothesis, is sufficiently explained by the structure of the corpus spongiosum, combined with the morbid sensibility at the seat of disease. The pressure of a bougie against an irritable stricture causes an increased flow of blood to the seat of irritation, distends the vessels of the corpus spongiosum around the obstruction, and consequently tightens the grasp upon the instrument. The muscular contraction, constituting spasmodic stricture, seems generally to arise from the irritation of the urine passing over the inflamed mucous membrane at the seat of obstruction; although it may sometimes proceed from irritation of neighbouring parts, as, for example, the application of a ligature to a hæmorrhoidal tumour.

In the generality of cases of spasmodic contraction of the muscles surrounding the urethra, we have sufficient evidence of the existence of inflammation. A purely spasmodic stricture of the urethra must certainly be deemed comparatively of rare occurrence. It is not difficult to account for spasm in the inflamed state of the lining membrane of the urethra; but, when healthy, it

cannot be supposed that the urine will often prove so highly stimulating as to excite the surrounding muscles to spasmodic action. That spasm of the muscle embracing the membranous portion of the urethra may possibly occur from long-continued efforts to resist the desire for the expulsion of urine, seems to be a more probable supposition. It is also very probable that some peculiar derangement of the nervous system, of the true nature of which we are unacquainted, may occasionally interrupt that sympathetic consent described by Sir C. Bell as existing between the muscles surrounding the urethra, and those concerned in the contraction of the bladder, by which the former relax whilst the latter contract; and which is compared by him to the well-known connexion between flexor and extensor muscles.

Spasmodic stricture, then, must certainly be considered as very generally the result of inflammation at the membranous or bulbous portions of the urethra, causing so much irritation, especially when the urine passes over the inflamed surface, as to produce contraction of the surrounding muscles, so that their necessary relaxation on the contraction of the detrusor is prevented. These inflammatory spasmodic strictures, most frequently occur in persons who, when affected with gonorrhœa, indulge in some excess or other, especially in wine, spirit, or punch; the last the

most injurious of all from its admixture with acid: or they may arise from the sudden suppression of the gonorrhœal discharge, from cold or other causes. In these cases, the gonorrhœal inflammation, rapidly extending to the bulbous and membranous portions of the urethra, often excites so much spasmodic action of the surrounding muscles, as to cause complete retention of urine; or the same effect may arise from the sudden increase of pre-existing inflammation in those parts. All permanent strictures at the bulbous and membranous portions of the urethra may be increased by spasmodic action brought on by the passage of instruments, injurious indulgence in vinous or spirituous liquors, or, indeed, any cause which may excite irritation and inflammation at the seat of obstruction.

8. *Stricture from injury to the urethra.*—The urethra is occasionally injured from within, by instruments lacerating its lining membrane, which injury sometimes causes stricture. The urethra may be torn across, or ruptured, from blows upon the perineum, either from a kick, or from a person being thrown forwards upon the pommel of a saddle. Sometimes the external parts are divided as well as the urethra; but the latter may be torn without any wound of the integuments. From the resistance which it meets with from the arch of the pubes, the urethra is very liable to be injured at that part by any

violent blow upon the perineum. Some of the bones of the pelvis may be fractured, especially the ischia ; or the symphysis pubis may be separated or loosened. These injuries frequently give rise to strictures of the very worst kind.

CHAPTER III.

SYMPTOMS OF STRICTURE.

As might be expected, the early signs of stricture are seldom sufficiently marked to attract attention ; and the disease has generally made considerable progress before it is discovered. A slight contraction of the urinary canal, unless in an irritable urethra, will cause but little impediment to the discharge of the urine ; and the stricture is not often suspected until some difficulty in micturition is experienced. The first thing which commonly attracts the attention of a person with stricture of the urethra, is, that his urine is not passed in so full a stream, or so forcibly as formerly : he will next, probably, observe the escape of a small quantity of water after micturition has been apparently completed. The part of the urethra behind the obstruction, in many cases, forms a reservoir for the collection of a small quantity of urine,

which is not affected by the contraction of the bladder, but gradually trickles away afterwards through the stricture. The same thing may happen when there is no dilatation behind the obstruction, in consequence of the greater difficulty with which the last few drops of urine are urged forward through an obstructed passage, than a larger quantity. As the contraction increases, the stream of urine is either bifurcated, spiral, or scattered. These different appearances all arise from the urethra being incompletely filled by the urine, which, when it reaches the orifice of the canal in an unequally diffused stream, must necessarily be either divided, or, if entire, very minute or spiral. It is soon found that the calls to make water are more frequent during the day; and that they occur two or three times in the night. When the stricture has become very contracted, the urine is passed with great difficulty, either by drops, or in a very fine thread-like stream, with much straining; and the abdominal muscles are excited to powerful action. The irritation frequently extends from the stricture to the rectum; and the patient has often added to his miseries both prolapsus ani and hæmorrhoids.

A glecty discharge is a very common symptom of stricture in all its stages; and whenever a gleet has continued for any length of time,

the urethra should invariably be examined. Diarrhœa is also a frequent consequence of bad strictures, apparently, from irritation, extending by sympathy to the mucous membrane of the large intestines. The patient often complains of an aching in the perineum, especially immediately after having made water. Pains are, also, occasionally felt in the loins and inguinal regions. In bad cases, sterility is often induced from obstruction to the seminal fluid ; and from irritation extending to the prostatic part of the urethra, the emission of semen is often attended with very acute pain,—the prostate gland as well as its ducts frequently becoming enlarged. Occasionally, the inflammation of the prostate terminates in suppuration, and the abscess is frequently burst by the introduction of the bougie, as is indicated by a free discharge of pus from the urethra. The sufferings of the patient are often much aggravated by the inflammation extending to the mucous membrane at the neck of the bladder, when the incessant and urgent desire to pass his urine becomes very distressing. It often happens that the presence of a stricture is unsuspected, until some indiscretion of the patient, causing inflammation in the diseased part, gives rise to difficulty in micturition, if not to complete retention of urine. A considerable quantity of vitiated mucus is often secreted from the urethra posterior to the stricture, from

the bladder, ureters, and probably pelves of the kidneys. This vitiated mucus is deposited from the urine on cooling, and may form a third part, or even more, of what has been passed. It has a dirty-white, slimy appearance, and frequently exhales an offensive odour. This secretion of vitiated mucus is the effect of irritation, and more or less inflammation of the lining membrane of the urinary organs, and is observed in many diseases of these parts besides stricture, especially in calculus and enlarged prostate. It is highly desirable that the existence of stricture should be ascertained as early as possible.

If a person be subject to a gleet discharge, whether constant or occasional only, the urethra should be examined without loss of time. This proceeding should be adopted, should the urine be passed more frequently than ordinary ; or, if a dull aching pain be felt for a short time after micturition. Persons with stricture are sometimes subject to occasional attacks of inflammation of the testes. If such inflammation, therefore, occur without being the result of gonorrhœa, the surgeon should not rest satisfied until he has passed a bougie ; and it should always be borne in mind, that the urine may be voided in a very tolerably-sized stream, when a stricture will admit with difficulty the introduction of a No. 7 or 8 bougie ; and in some

instances when the contraction is even greater. Rigors, except from the introduction of instruments, are not commonly experienced in this country by persons affected with strictures; but, in warm climates, from the greater irritability of the nervous system, the constitutional sympathy with the local disease is often indicated by paroxysms of intermittent fever. In some persons the constitution readily sympathizes with irritation of the urethra, and rigors, often very severe, are apt to occur soon after the introduction of instruments. These rigors are commonly followed by heat of skin, and more or less perspiration. When a stricture has become rigid and narrow, the difficulty in passing the urine is often most distressing; the bladder becomes very irritable, and often much contracted, being, in many cases, incapable of containing more than three or four ounces of urine.

In bad cases of stricture, the urine is frequently passed every half hour, or oftener, during the day, either by drops, or in a fine thread-like stream, which occasionally stops; and the patient is obliged to assist its passage by extending his penis, and, to use the language of Sir A. Cooper, "milks himself." During the night the patient's rest is constantly disturbed by the necessity for rising to pass his urine; or it dribbles away from him unconsciously whilst asleep. To add to his misery, occasional attacks

of complete retention of urine may occur ; and then his sufferings are truly pitiable. The effects of a highly contracted stricture upon the parts behind it have been previously described ; and it will be recollected that, occasionally, disease of the kidneys is superadded to that of the urethra and bladder. Although the catalogue of a patient's miseries with a bad stricture is a long and fearful one, yet he may have the consolation of knowing that they will mostly disappear on the removal of the obstruction in the urethra. A bladder that at one time would scarcely contain three or four ounces of urine, seems gradually to enlarge as the stricture widens ; and when the urethra is dilated to its full size, the bladder is often capable of containing from eight to twelve ounces of urine. There is every reason to suppose that the muscular coat of that viscus becomes thinner as the necessity for its increased exertion ceases.

CHAPTER IV.

TREATMENT OF STRICTURES OF THE URETHRA.

FOR the successful treatment of its diseases, the urethra must be viewed, not merely in relation to its morbid anatomy, but also physiologically. The extreme delicacy of its lining membrane, and great vascularity of the subjacent textures, as well as the constitutional sympathies often excited if it be roughly handled, must all be most carefully considered. The urethra should be regarded as an extremely sensitive canal, endowed with a high degree of vitality; and not treated mechanically as a mere inert channel in which holes can be drilled, or obstructions broken down with impunity. With this view of the subject, when introducing instruments into the urethra, the surgeon constantly bears in mind that by art, not force, his object is to be accomplished; consequently, in all his proceedings, extreme gentleness and caution are observed.

An exception to this rule, however, may possibly occur in a very bad stricture with an over-distended bladder, in which it may become a question, although a doubtful one, whether forcibly boring through the obstruction may not be the most judicious method of proceeding; but, even then, it is only in experienced hands that such a practice is likely to prove successful. Notwithstanding the best rules that can be laid down for his guidance, as manual dexterity can only be acquired by practice, the young surgeon will see the necessity of eagerly seizing every legitimate opportunity in the living subject for the introduction of instruments into the bladder.

The surgical treatment of stricture of the urethra comprises three different methods of proceeding: 1st, its simple dilatation; 2nd, its absorption; and 3rd, the destruction of the diseased tissue. The first and second means are usually accomplished by the bougie, sound, or catheter; whilst the last is effected by caustic. A fourth has lately been adopted and recommended by Mr. Stafford, viz. that of incision, by which the hardened tissue forming the obstruction is divided by a lancet thrust forward from a canula, in which it is conveyed to the stricture.

The instruments commonly used for the cure of strictures of the urethra are, bougies, sounds, gum elastic and silver catheters.

Bougies. — Bougies are of various kinds,

some being composed of wax, some of plaster, and others of elastic gum or catgut. The wax bougies are the softest ; and are now chiefly used to take a cast or impression of a stricture to ascertain its true nature. The plaster bougies are of much firmer consistence, and, when properly made, may be very advantageously employed in dilating and promoting the absorption of a stricture. The plaster bougies made by Messrs. Wright and Ewen of Jermyn Street are of three kinds, black, white, and red : the former being the softest, and the latter the hardest ; whilst the white are of a consistence between the two, and will generally, I believe, be found the most useful, as they have sufficient firmness to retain their requisite shape, under a moderate degree of pressure. The elastic gum bougies are favourite instruments with many practitioners, and are much employed in France. When a stricture is yielding, considerably dilated, and beyond the straight part of the urethra, from their readily adapting themselves to the curve of the canal, they may probably prove the safest instruments in the hands of the inexperienced. In rigid strictures, especially when much contracted, irritable and disposed to spasm, the elastic gum bougies are quite inefficient, as a very slight obstruction causes them to bend, and consequently renders it impossible to use pressure in a proper direction. Bougies of this kind may

occasionally be used with advantage in irritable strictures, which will admit a No. 5 or 6, as their introduction, in some instances, causes less irritation than other instruments; but, with few exceptions, they are certainly very inferior to the plaster bougie. The small catgut bougie is sometimes used to very narrow strictures; but it has always appeared to me to be generally a very inferior instrument, in such cases, to one of plaster; the point of the latter being more likely than the former to glide into the orifice of the obstruction, with less chance of wounding the urethra.

Catheters and sounds. — The gum elastic catheter is a most useful instrument, and often proves of very great value in the treatment of stricture. Gum catheters should be kept of their proper curve by a stilette; and they may be used with or without it, as occasion may require. Steel sounds, sometimes coated with silver to preserve them from rust, unless the urethra be too irritable to bear them, are undoubtedly far preferable to all other instruments in dilating a stricture, which often becomes so hard and contracted, that bougies of a less solid material are very inefficient, if not entirely useless. Silver catheters are also very useful, especially when an instrument of very small size only can be employed; for, being lighter than

the more solid sound, they are consequently less likely to injure the urethra. Where rigid strictures have been for some time impervious, I generally endeavour first to introduce a No. 2 silver catheter; as, when successful in its introduction, the urine flowing through the instrument is always a joyful sight to the patient, by affording him the most convincing proof that it has entered his bladder. Solid instruments made of flexible metal, called metallic bougies, are sometimes used; but they seem to me to be very inferior to those made of steel or silver, being likely to lose their proper curve by bending; nor have they, apparently, any particular quality to recommend them in preference to others of greater firmness.

Caustics. — In very bad, firmly-contracted strictures, either impervious to instruments, or of an obstinately unyielding character, caustics have been employed, either sufficiently powerful for their destruction, or in such a quantity as to act upon the obstruction principally by stimulating the absorbents to remove the diseased tissue. Caustics are also applied to strictures for the purpose of allaying irritation, which property they sometimes evince in a remarkable manner. The argenti nitras and potassa fusa are those that have been chiefly employed.

The application of caustic for the destruction of strictures of the urethra was much practised

and recommended by John Hunter, who used the nitrate of silver for that purpose. Sir Everard Home became a most zealous advocate for this practice, and published a work containing a great number of cases in which the nitrate was employed. It is evident, from a perusal of his work, that many strictures were cured by the nitrate of silver, after all other means had failed. In several instances, however, it proved unsuccessful; and, sometimes, from the irritation caused by its application, the remedy could not with propriety be continued. The severe effects occasionally produced by the nitrate of silver in the hands of Sir E. Home, who used it very freely and boldly, naturally excited much prejudice against the method which he employed; consequently, so formidable a weapon as the armed bougie of Sir Everard is seldom wielded by modern surgeons. The nitrate of silver is occasionally used in small quantities to irritable strictures with very good effects.

Mr. Whately, a contemporary of Sir E. Home's, strongly recommended the employment of the potassa fusa in strictures of the urethra, in preference to the argenti nitras. The practice of Mr. Whately has generally been regarded as inefficient, from the extremely minute quantity of the potash which he employed. Mr. Whately's method of using the remedy will be understood from the following quotation from his

work : “ In every case, before applying the potassa fusa, we ought to be able to pass a bougie into the bladder of at least a size larger than one of the finest ; this is necessary, both to enable us to apply the caustic to the whole surface of the stricture, and likewise to put it into our power to remove a suppression of urine, should it occur during the use of the caustic. A piece of broken caustic, half the size of the smallest pin’s head, should be selected ; the particle cannot indeed be too small for the first application ; the caustic should be pushed down so as to sink it in the bougie below the margin of the hole. When the caustic bougie has passed through a stricture, it should be immediately withdrawn exactly to the part at which it first rested : after which, it should be passed slowly through the stricture a second time. At the expiration of seven days, the caustic should be repeated. The size of the armed bougie should be increased until the urethra is dilated, if possible, to the natural size, which is generally practicable in recent strictures. I have, in a few instances, applied the caustic at the end of five days. In all cases where a bougie cannot be got into the stricture, a fair trial should be given to the lunar caustic.” The twelfth part of a grain of potassa fusa was the largest quantity recommended to be used by Mr. Whately.

It is evident from the above quotation, that Mr. Whately neither recommended the potassa fusa, nor had much confidence in its efficacy in impervious strictures, but considered the nitrate of silver preferable in such cases. His strong recommendation, that, before using the potash, we should be able to pass a bougie into the bladder, of at least a size larger than one of the finest kind, considerably diminishes the value of the remedy, as the greatest difficulty will then have been surmounted previously to its application. Mr. Whately appears, also, to consider it essential that the potassa fusa should be applied to the whole surface of a stricture. It seems to me that the good effects experienced by Mr. Whately from the application of such very minute quantities of potassa fusa, must have been entirely derived from its property of allaying irritation. It can scarcely be expected that the application of the seventeenth part of a grain of potassa fusa once a week to an impervious fibro-cartilaginous stricture should make much impression upon the disease. It was in hard cartilaginous obstructions that the nitrate of silver very commonly failed in the hands of Sir E. Home; and he remarks—"that the caustic makes less impression upon such strictures than could be imagined by any preconceived opinion." I can readily believe that the nitrate of silver, as used by Sir E. Home,

was successful in removing many strictures; but in those which are long, hard, and narrow, the attempt to pilot one of his armed bougies through such intricate channels must at all times be uncertain in its results. I have never ventured to use the armed bougie of Sir E. Home, having always adopted the safer method of applying the nitrate of silver to strictures, by the insertion of a piece of the caustic, of the size of a large pin's head, into the point of a bougie. It was the extremely inefficient action of the argenti nitras upon hard and impervious strictures, as well as the failure of other means, that first induced me to give the potassa fusa a fair trial, more as a forlorn hope than with any confidence in its success. I soon found that, to effect any good in such cases, it was necessary to use the potash in more efficient quantities, and more frequently than recommended by Mr. Whately. The good effects of the remedy, as well as its superiority to the argenti nitras, became sufficiently apparent, after a few applications, to induce me to persevere in the use of the potash. Encouraged by success in two or three cases of stricture, in which other means had previously failed, I gradually acquired that confidence in the powers of the potassa fusa, which has often induced me to continue its use with patience and perseverance; and, in many instances, it has only been from long persistence

in the employment of the remedy that the disease has finally yielded. The potassa fusa, when used in this manner, and with the caution subsequently recommended, will be found entirely free from any ill effects, and infinitely superior to the argenti nitras, in opening a stricture, often proving successful in cases where the nitrate had failed. The saponaceous compound formed by the dissolved potassa fusa, by the oil, and mucons secretion of the urethra, proves less irritating to the lining membrane than the more watery discharge caused by the argenti nitras, which renders the action of the latter less under the control of the surgeon than the former. I may add, that the application of the potassa fusa causes but little pain or subsequent irritation. The nitrate of silver, when freely applied to a stricture, produces a slough; inflammation consequently ensues, adhesive matter is thrown out, causing more or less consolidation of tissue, so that, in hard fibro-cartilaginous obstructions of any extent, it often happens but little progress is made after several applications of the remedy. The potassa fusa appears to me less disposed to cause adhesive inflammation than the argenti nitras; to which circumstance may probably be chiefly ascribed the greater success of the former than the latter, in many cases where the strictured portion of the urethra is of considerable extent.

Effects of the Potassa Fusa.—This substance, when properly applied to strictures of the urethra, causes a sensation of heat seldom amounting to pain, which is commonly of very short duration, although it may remain for an hour or more. When freely used, its application is often followed for a day or two, and sometimes for a week, by a slight mucous or muco-purulent discharge, occasionally tinged with blood; generally, however, if only gentle pressure be made against the stricture, there is apparently but little discharge beyond that which is observed on the point of the bougie. In the whole course of my experience with this remedy in stricture, I have never known hæmorrhage of any consequence to ensue from its application; but, in irritable strictures, very little pressure of the bougie is often sufficient to cause the discharge of a few drops or more of blood. Strangury has not followed the application of the potash in my hands, unless that symptom had been previously present, when the difficulty of passing the urine may sometimes have been slightly increased for a few hours; but it generally affords marked relief under such circumstances. The potassa fusa, when first applied to a stricture, causes an increased secretion of mucus, which, mixing with the alkali, renders its action less powerful, and, at the same time, diffuses it freely over the diseased part. I believe that its

good effects arise more from its promoting absorption of the stricture, than by absolute destruction of tissue.

The property possessed by the potassa fusa of combining with oily substances and animal mucus, forming a saponaceous compound, renders its action more mild, and also enables it to penetrate the hardened tissue of a stricture, to soften and promote its absorption more effectually than the nitrate of silver. Whatever may be the precise mode of its action, the superiority of the potassa fusa to the argenti nitras in opening a stricture, I have had ample opportunities of experiencing. I have never observed a slough passed after the application of the potash; and it seldom causes the painful scalding sensation occasioned by the urine passing over an ulcerated surface.

To observe the action of the potassa fusa, I have occasionally applied it, in the same manner as in stricture, to hard spots upon the tongue, caused by slight thickening of its mucous and submucous tissues. The part in immediate contact with the potash quickly changes to a deep brown, surrounded by a small red circle, and a little bloody serum oozes out. For two or three days afterwards the surface has a whitish appearance, and, at the end of a week or less, usually looks quite healthy; no ulceration ensues. The potassa fusa appears to me to act beneficially

upon strictures :—Firstly, by its dissolvent powers ;—Secondly, by promoting absorption, and stimulating the congested vessels to contraction ;—Thirdly, by relieving irritability and inflammation.

Method of applying the Potassa Fusa.—Before using the potash, a bougie should be passed down to the stricture, that its distance from the orifice of the urethra may be correctly ascertained. A small piece of potassa fusa should be inserted into a hole made in the point of a soft bougie. The eighth part of a grain is the smallest, and a grain the largest quantity of the potash I am in the habit of using ; but it will rarely be necessary to exceed the sixth of a grain. It will be well to make two notches in the bougie containing the potash ; one, marking the exact distance of the stricture ; the other, an inch beyond ; as, very probably, on introducing the armed bougie, the first mark may be concealed within the urethra, from the penis being more stretched than when the measurement was taken. The bougie must be well moulded round the potassa fusa, so as to prevent the alkali from projecting ; and it should be so placed, that it may be more applied to the upper than the lower part of the stricture, for obvious reasons. Armed bougies should be well rounded at their points, to guard the urethra from the action of the potash before it reaches the stricture. In very bad

cases it may be advisable occasionally to use the potassa fusa in the recumbent position, as it will then not only be best applied to the surface of the stricture, but be most likely to penetrate its texture, which, in old and hard obstructions, is very desirable. The bougie should, of course, be well oiled previous to its introduction.

To impervious strictures, from three to four are the sizes of the bougies I generally employ when using the potassa fusa ; and, to such as are pervious, they should be used of a size or two larger than the obstruction, which the point of the instrument should penetrate. The armed bougie must be rapidly passed down to the stricture, and held against it, with gentle but steadily continued pressure, for one, two, or three minutes, according to the nature of the obstruction, which if very irritable and readily bleeding, the shortest time, or even less, should be at first selected as the most prudent course.

The periods at which it will be most advisable to repeat the application of the potassa fusa must depend upon its effects and the nature of the cases in which it is used. In many old chronic strictures, I have used the potash advantageously every second or third day ; but, in others attended with more irritability, it will be better to allow four days to intervene before its application be repeated. There is, however, one safe rule for our guidance upon this point, which is,

never to re-apply the potassa fusa until the complete cessation of all irritation produced by its previous application. The potassa fusa should be kept in a phial with a ground glass stopper. If good, it is extremely hard, and of a blue or dirty white colour. It should not be broken until required for immediate use.

Cases in which the Potassa Fusa may be used with advantage.—Firstly, hard,* fibro-cartilaginous strictures, impervious to instruments without the employment of injurious pressure;—Secondly, hard strictures of long standing, which, although admitting the passage of a small bougie, bleed freely on its introduction;—Thirdly, irritable strictures;—Fourthly, spasmodic strictures, not arising from acute inflammation of the urethra;—Fifthly, strictures which have a marked disposition to contraction.

* Resembling cartilage in hardness.

CHAPTER V.

DIRECTIONS FOR THE INTRODUCTION OF SOUNDS
AND CATHETERS.

THE patient may either stand before the surgeon, or be placed in the recumbent position. When it can be adopted, the former position is usually selected. The end of the penis is to be supported between the fore and middle fingers of the left hand, whilst the thumb should be placed immediately before the middle finger, on the lower part of the glans, by which means will be best obtained that control over the urethra so requisite in the introduction of instruments. The handle of the sound or catheter being turned towards the patient's left groin, and held like a pen lightly between the two first fingers and thumb of the right hand, or between the thumb and index finger, the point of the instrument should then be introduced into the urethra and gradually passed forward, whilst, at the same time,

the penis is gently extended. As the sound glides along the urethra, the right hand must be gradually raised and brought within two or three inches of the patient's abdomen, with the instrument in a perpendicular position. The point of the sound should now be gently pressed forward under the arch of the pubis along the upper part of the urethra as far as it will go without much resistance, whilst, at the same time, the penis is put upon the stretch; the handle of the instrument must now be depressed until its point has entered the bladder, which, in all probability, it will readily do, if the urinary passage be free from abnormal obstruction. If, however, the instrument should not enter the bladder, it is most probably pressing against the under surface of the triangular ligament, in which case its point should be withdrawn for an inch, and then again passed onward with the same precautions as before. The natural obstacles in the urethra are readily surmounted by careful manipulation. The lacuna magna will be easily avoided by keeping the point of the instrument for about two inches along the lower surface of the urethra; but afterwards, during its whole course, the end of the catheter or sound should be kept as much as possible to the upper part of the canal, as the greater number of the lacunæ are situated inferiorly.

After having got beyond the lacuna magna,

the instrument will pass on with facility to the commencement of the bulbous portion of the urethra, where it becomes a little narrower, which slight contraction is often distinctly felt ; but the part most likely to cause obstruction, if care be not taken to avoid it, is the triangular ligament which passes under the urethra ; for, unless the end of whatever instrument we may use be kept to the upper part of the canal, it is apt to sink into the sinus of the bulb ; and, should the handle be then depressed, its point will strike against the inferior surface of the ligament, where most false passages have been made. The error is, however, generally to be easily avoided, especially with a solid curved instrument ; for as soon as this has passed the pendulous portion of the canal, it is only necessary to keep its well-rounded point steadily to the upper part of the passage, whilst, at the same time, the urethra is put upon the stretch, by which means the triangular ligament will seldom offer any difficulty.

After the sound or catheter has passed the triangular ligament, its point may probably be prevented from entering the bladder either by a slight projection of the prostate, or by the ligamentous band at the vesical commencement of the urethra ; but, by well depressing the handle of the instrument, the obstacle is usually very quickly surmounted. When a narrow stricture

has long existed at the bulb or membranous part of the urethra, its prostatic portion frequently becomes much dilated, forming a depressed pouch below the orifice of the bladder, so that the point of a bougie or catheter is apt to catch against the part below the vesical entrance. This pouch is to be avoided by using an instrument with a larger curve than ordinary ; and its point must be well kept to the upper surface of the urethra. In passing a straight instrument, the penis must be raised and gently extended, and no impediment should be experienced until it reaches the middle or transverse portion of the prostate, when its point is to be well raised by depressing the hand ; but, to enable it to ride over the obstruction, it may be sometimes necessary to have recourse to the assistance of the finger in the rectum.

Before examining a person supposed to have a stricture of his urethra, he should be desired to make water, so that the size of the stream of urine may be ascertained, which will give a tolerably correct idea of the calibre of the urethra. If the stream of urine be but little diminished, a bougie properly curved, and nearly the size of the orifice of the urethra, should be selected ; for that part being naturally the smallest of the whole canal, an instrument which enters it with facility should readily pass on into the bladder. If there be a stricture, the bougie will most probably be

stopped either at the commencement of the bulb, or at its junction with the membranous portion of the urethra ; although, as before observed, an obstruction may exist in any part of the passage. If the first bougie should be so obstructed that it cannot readily be passed onward, the size must be decreased, until one be selected which will pass through the stricture. If any difficulty should be experienced in passing a No. 6 bougie when the size of the stream of urine is not much decreased, it will be well to try a silver catheter or sound, as the bougie may probably have either lost its proper curve, or become entangled in one of the lacunæ. As a general rule, when examining a person with stricture, a bougie of the size of the stream of urine should be used. As a polished metallic instrument with a well-rounded point is less likely than a soft bougie to catch in the lacunæ, and, by being better kept to the upper part of the urethra, is also less apt to sink into the sinus of the bulb, many surgeons use the catheter or sound, when first examining a patient with stricture. As a soft bougie is, however, of less formidable appearance than the sound or catheter, I generally prefer at first using the former. When rapidity is not required, the catheter, sound, or bougie should be very slowly introduced, and withdrawn by an almost imperceptible movement of the hand, as causing less uneasiness to the patient than a more

quick and legerdemain method of proceeding. The bougie may appear to have entered the bladder, when, in reality, it has not passed the stricture; but the mistake is discovered when the instrument is withdrawn, for it will either be doubled upon itself, or twisted like a corkscrew. When introducing a bougie, it will be well to bear in mind that the opening of a stricture is not always in its centre; and that it may be necessary to vary the direction of the point of the instrument. If a patient should become faint, which is very commonly the case on the first introduction of an instrument into the bladder, he should be immediately laid down upon some chairs or a sofa.

The bougie appears to act beneficially upon a stricture:—firstly, by enlarging the passage through it, consequently diminishing the irritation caused by the pressure of the urine;—secondly, by lessening the morbid sensibility, inflammation, or congestion of the lining membrane at the seat of disease;—thirdly, by causing absorption of the morbid tissue. These effects appear evident from the successive introduction of the bougie generally causing less pain than when the instrument is first introduced; and by the gradual restoration of the urethra to its healthy calibre. Surely the circumstance of the pain becoming less on each succeeding introduction of the bougie tells against

the supposition, that it is by causing inflammatory softening and subsequent absorption of the stricture that its good effects are produced. If such were indeed the action of bougies, the pain would rather be increased than diminished by their successive introductions, which is not usually the case. I cannot but think that whenever inflammation of a stricture is either caused or increased by the introduction of instruments, but little, if any, good is effected by them; and that such inflammation oftener retards than advances the patient's progress towards recovery. The lining membrane at the seat of stricture being usually in a state of congestion, or chronic inflammation, it might naturally be expected that gentle pressure would afford relief; and the good effects of compression in diminishing chronic inflammation and congestion of other parts are often indisputable. It is well known that parts recently formed from disease are more readily absorbed than the healthy tissues of the body.

The length of time most advisable to retain an instrument in a stricture must entirely depend upon the degree of irritability of the urethra and morbid sensibility at the seat of disease, as also upon the state of the bladder. The periods to be observed between the successive introductions of the bougie must also

be regulated by the same contingencies. The subject will, therefore, be most advantageously considered when discussing the treatment of different strictures.

CHAPTER VI.

TREATMENT OF PARTICULAR KINDS OF STRICTURE.

Dilatable Stricture.— This stricture seldom offers any difficulty in its management, a few introductions of the bougie or sound being all that is generally required for its removal. Either the plaster bougie or sound may be used, whichever gives less pain to the patient. If the urethra should possess but little irritability, the bougie or sound may be passed every second or third day. The size of the instrument must be gradually increased. If a No. 9 can be passed at first, the same sized instrument must be introduced the next time, and allowed to remain for a few minutes, when it should be withdrawn, and a No. 10 be substituted for it, if practicable. The bougie may be retained in the stricture from a quarter to half an hour, if it can be borne with comfort to the patient ; but should pain or irri-

tation ensue, it must be instantly withdrawn. A dilatable stricture is often rapidly cured; five or six introductions of the bougie being sometimes sufficient to restore the strictured portion of the urethra to its healthy size. In order, however, to guard against a relapse, it will be prudent to pass a full-sized bougie once a week for some little time, and then at intervals of a month. I have known a stricture, which at first would only admit the introduction of a No. 8 bougie, at the expiration of a fortnight to be sufficiently dilated to allow of the passage of a No. 13 or 14. Under these circumstances, a surgeon may be very unjustly censured; for should a patient apply to another medical man, who may not probably be aware of the rapidity with which a stricture can sometimes be dilated, the chances are ten to one he will be told that it is impossible for him to have had a stricture. In some cases, the introduction of the bougie causes irritation of the lining membrane of the stricture; if so, it must be discontinued until such irritation be relieved. In some persons, the urethra is possessed of so much natural irritability, as to bear very badly the introduction of instruments of any kind. In such irritable urethræ, the elastic gum catheter without its stylette, if very slowly passed into the bladder, often causes less irritation than any other instrument.

This stricture commonly requires but little medical interference beyond the administration, once a week, of about four grains of blue pill, with six of the compound extract of colocynth; but should the bowels be disposed to constipation, a teaspoonful of flour of sulphur, with an equal quantity of electuary of senna, may be given every alternate night, or oftener if necessary. If, from the introduction of instruments or other causes, the stricture should become irritable or inflamed, leeches may be applied to the perineum, and afterwards warm fomentations and poultices; in addition to which, it will be advantageous to administer every night at bedtime twelve grains of Dover's powder, with one or two of calomel, until the irritation subside.

Simple Chronic Stricture.—The degree of difficulty in curing a stricture of this kind will depend chiefly upon the nature of the obstruction. If the mucous and submucous tissues of the urethra only are thickened, the disease will more readily yield than when either the fibrous structure of the canal is implicated in the mischief, or the cells of the corpus spongiosum are condensed by effused lymph. Generally speaking, in proportion to the hardness and extent of a stricture will be the difficulty in its removal. An old, firmly contracted, extensive, fibro-cartilaginous stricture will be the most difficult of all to cure, it being commonly very slow in

yielding to the bougie, and remarkably prone to return if the use of the instrument be omitted. The longer a stricture has existed, especially when the contraction has been sufficient to offer much impediment to the urine, the more condensed and rigid we must expect to find it. As the degree of natural sensibility in the urethra varies considerably in individuals, the introduction of instruments will be much better borne by some persons than by others. There is just as much difference in the degree of sensibility of a stricture as in the urethra itself. Strictures, as well as many other local diseases, are also often much influenced by the state of the constitution.

From the preceding observations, the conclusion naturally follows, that upon various contingent circumstances will depend the length of time required for the cure of strictures, and that it is impossible to form an accurate opinion upon the subject merely from the size of the instrument that can be passed into the bladder. There is one general rule applicable to the treatment of all cases of stricture, which is, to feel our way cautiously, taking especial care that, in a too anxious desire to dilate a stricture, we do not do more harm than good by causing irritation; which error every surgeon accustomed to the management of the disease has occasionally committed.

In the surgical treatment of the simple

chronic stricture, we must endeavour to restore the diseased portion of the urethra to its healthy size by the introduction of solid sounds or bougies, taking care that the dilatation be very gradually effected, so as to cause as little irritation as possible. In many cases, the introduction of instruments may be advantageously repeated every second or third day; but if irritation ensue, their use must be discontinued until its cessation. If, however, the irritation should continue, so as to prevent for some time the further dilatation of the stricture, two or three gentle applications of the potassa fusa will often succeed in affording relief after the failure of other means. If a stricture admit with difficulty a No. 2 or 3 sized instrument, and its introduction cause so much irritation as to retard the process of dilatation, the use of the potassa fusa in such a case will generally prove very beneficial. It is always desirable that persons should remain quiet for a few hours after the introduction of instruments; and when a stricture is predisposed to irritation, if the patient's avocations will not permit him to rest during the day, the bougie or sound should be passed in the evening. In cases where the contraction is very great, admitting only a very small-sized instrument, it will be better to use a silver catheter; and if a No. 2 or 3 can be got into the

bladder, it may be retained for four or five days, if convenient, and but little irritation ensue. When the catheter has been withdrawn, another, a size larger, should be passed, and also retained, if the urethra will bear such a proceeding without any ill effects. A silver catheter can be often passed into the bladder in old, hard, and narrow strictures, when a gum elastic one, from its yielding nature, will scarcely enter the obstruction. Great care must be taken in the introduction of very small silver catheters. Extremely gentle pressure only must be used before the point of the instrument has entered the stricture, which will be known by its being firmly grasped; and when increasing the pressure, to ascertain that we are in the right direction, it is only necessary to attempt slightly to withdraw the catheter, which is sure to be tightly held, if in the contracted portion of the urethra. This precaution is especially necessary, for the stricture being usually much the hardest part of the urethra, a degree of pressure which can be safely used when the instrument has fairly entered the obstruction, might act injuriously upon other parts of the urinary passage. When the catheter has fairly entered the stricture, the attempt to pass it onward should be persevered in from ten to twenty minutes if necessary, bearing in mind that an obstruction

may be gradually dilated without injury, whilst, by a more sudden effort, the urethra would most probably be torn. It requires considerable experience to know the degree of pressure that can be safely employed in passing a metallic instrument through a firm and narrow contraction of the urethra, which is often an extremely delicate as well as difficult operation; and, at every perceptible advance of the catheter or sound, it will be better to desist for a minute or two to ascertain that pressure is properly directed, and to dilate a little the anterior part of the stricture. If the lining membrane of the urethra should be lacerated—an occurrence which is generally very perceptible—it will be proper to withdraw the instrument, and leave the urethra undisturbed for a few days, that the laceration may have time to heal before another attempt be made to dilate the stricture. Much difference of opinion exists as to the propriety of keeping catheters or hollow bougies fixed in the urethra, and increasing their size every four or five days until the stricture is fully dilated; a favourite practice with the late Baron Dupuytren and others, but which is not always practicable from the excessive irritation often caused by the constant presence of instruments in the urethra.

From my own very limited experience of this plan, an impression has been made on my mind that, generally speaking, a firm stricture,

when quickly dilated, is more likely to return than when the process is more slowly effected ; besides, with the exception of hospital patients, there are but few persons who either can or will submit to the necessary confinement, unless in urgent cases. When, however, the urine causes much irritation in passing over the lining membrane of a stricture, the practice is often attended with the very best effects. A stricture should be dilated, if practicable, to the full size of the urethra, which in some persons will readily admit a No. 14 bougie, whilst in others a No. 10 or 11 will be passed with difficulty. It is always desirable that an instrument as large as the orifice of the urethra should be introduced into the bladder ; and where, from the effects of former ulcers or malformation, the orifice is contracted, it should be enlarged downwards by a slight touch of a straight bistoury. Care must of course be taken that the incision do not unite ; and all that is necessary to be done is to keep a piece of bougie fixed in the urethra for a few days.

Although desirable to dilate a stricture to the full size of the healthy urethra, it is not possible to do so in all cases. In many firm strictures which had existed several years, I have observed, that when sufficiently dilated to admit a No. 8 or 9 bougie, all attempts at further dilatation did more harm than good, by invariably causing so

much irritation as to increase the contraction for a time, without any subsequent good effects. Under such circumstances, all that is necessary to be done is to keep the stricture as open as possible by desiring the patient to pass for himself, or to have passed for him, as large a bougie as can be used without irritation once a week or fortnight, as may be necessary. When a stricture will not yield beyond a certain point, the patient must be content to put up with the trifling inconvenience of an occasional introduction of the bougie during the remainder of his life; and he may console himself with the reflection, that as long as a No. 8 sized instrument can be passed into his bladder with facility, the urine will meet with no impediment of consequence. Patients are often very uncomfortable if their strictures cannot be dilated to the full size of the healthy urethra, and are apt to run from one surgeon to another in the hope of being completely cured of their disease; by which practice their condition is often rendered worse. Each successive surgeon who is consulted, thinking very probably that he can do more than his predecessor, will exercise his handicraft, not without causing more or less suffering to the patient, until he finds out that all further attempts to widen the stricture are not only useless but injurious. To a patient whose stricture will bear without irritation the introduction of a

No. 8 bougie, but becomes irritable if one of a larger size be passed, the best advice we can give is to rest content with his present good, and not, by attempting too much, to hazard the advantage already gained. Take care, however, to keep the urethra as open as possible by introducing an instrument once a week. If from the introduction of instruments, or from indiscretion in the patient, irritation of the stricture ensue, the treatment previously described for the relief of irritation should be adopted. If the irritation continue for any length of time, the application of leeches should be repeated once or twice a week ; and the perineum should be well bathed with warm water every night.

During the whole of the treatment, it will be proper to have the bowels kept gently open by sulphur and senna. If the urine contain the lithates in excess, a teaspoonful of carbonate of soda should be given twice or thrice daily. If the phosphates should be in excess, it will be advisable to give ten drops of the diluted muriatic or nitric acid in an ounce and a half of the compound infusion of gentian three times a day, and great care must be taken to correct the state of the digestive organs, which are always more or less deranged when the phosphatic diathesis prevails. Whilst a patient is taking either acids or alkalis, his urine should be frequently tested ;

or, in endeavouring to correct an alkalescent state of that fluid we may render it excessively acid, and *vice versâ*. Exercise on horseback should be avoided in all cases of stricture, except very slight ones; and, even then, it is better dispensed with. Moderate walking, or riding in a carriage, will prove beneficial in improving the general health; for the vitiated mucus or mucopurulent discharge, which so often occurs in stricture, the balsam of copaiba is a very excellent remedy. From fifteen to twenty drops of it, with five of tincture of opium, in an ounce of camphor mixture sweetened with syrup, should be given twice or thrice daily; but not upon an empty stomach, as the copaiba in that state is most likely to disagree with the patient. If the urine contain lithic acid in excess, ten drops of liquor potassæ may be added to the copaiba draught. Exposure to cold damp weather should be avoided as much as possible during the winter, as well as the greater part of spring and autumn; and the patient must be desired to wear a thick flannel waistcoat and drawers; also lambs'-wool socks. Flannel of a lighter kind should also be worn during the warmer months. These precautions may appear trivial; but should a stricture be much contracted, irritable, or inflamed, by keeping the surface of the body warm, an attack of retention of urine will frequently be prevented.

Impassable stricture.—The great object in the surgical treatment must be, of course, to restore the urethra, as nearly as possible, to its healthy integrity. The accomplishment of this desirable object will require, in many cases, no inconsiderable degree of skill and judgment in the surgeon ; for, unless great gentleness and caution be used in attempting the introduction of instruments, so much irritation may sometimes be produced in a stricture as to render it equally impervious to the urine as to the bougie. When a patient applies for relief with a stricture, which, on examination, is found to be impervious to instruments, although permitting the urine to trickle through it, such remedial measures as are best calculated to diminish irritation of the urethra should be adopted before having recourse to a second attempt to pass a catheter or bougie. After having waited a few days, I generally try to introduce a No. 2 silver catheter ; but if it will not enter the stricture, I endeavour to introduce the smallest sized bougie or elastic gum catheter, with or without its stilette. If, however, after gentle and persevering efforts to get an instrument into the bladder, I do not succeed, I then have recourse to the *potassa fusa*, which I have found to be a truly invaluable remedy in such cases, and, in a great number of instances, its effects have very far surpassed my expectations. Experience has given me such confidence in the

efficacy of the potassa fusa in impervious strictures, that I have continued its application per severingly and successfully in many instances, where, but for such confidence, I should have abandoned the remedy in despair. In a few obstinate cases, I have been obliged, as has been previously observed, to use the potassa fusa from twenty to thirty times before succeeding in getting an instrument into the bladder.

Frequently, however, after a few applications on the point of a No. 3 bougie to an impervious stricture, a No. 2 silver catheter can be passed through it; and if there be no second stricture, or disease of the prostate, the instrument will pass on into the bladder. If the bougie containing the potassa fusa should pass through the stricture, it must be instantly withdrawn, and another without the potash substituted for it. If there have been much difficulty in getting an instrument into the bladder, the catheter should be retained, if practicable, four or five days. If the instrument cannot be retained for any length of time, it should be allowed to remain from a quarter to half an hour, if the stricture will bear the pressure without much irritation; but sometimes, from the constant spasmodic action of the bladder, it will be necessary to withdraw the catheter almost immediately, and means must be used to allay the irritation before another attempt at dilatation be made.

Each day's experience convinces me more and more that nothing is to be gained by employing a sufficient degree of force to tear through the obstruction; for, besides its liability to cause retention of urine, the necessary healing process will retard the cure of the disease. So convinced am I of the propriety of proceeding with extreme gentleness in these cases, that I prefer using the potassa fusa a few extra times, to the risk of tearing the stricture by premature efforts to pass an instrument through it. The rules for the management of the potassa fusa will be seen on reference to the observations on the mode of application and effects of that remedy. There are no cases that require more perseverance in the surgeon than impervious strictures, especially if much disposed to irritation. Whatever time, however, may be expended in such cases, will be amply repaid if we succeed in getting an instrument into the bladder.

As there are few diseases that cause so much anxiety as an impassable stricture, so there are none in which more sincere gratitude is felt and expressed by patients, when, after having long suffered from extreme difficulty in micturition, they are enabled to pass their urine in a tolerable stream. It is to them a transition from despair to hope. Although, certainly, the greatest difficulty will have been surmounted when an instrument has been passed into the bladder with-

out violence to the stricture, yet the remainder of the treatment will not always prove entirely free from difficulties. It is very easy to talk of gradually increasing the size of the instrument on each successive introduction, but not always so easy to accomplish ; for it often happens, that after having at one time succeeded in passing a No. 4, on the very next attempt to introduce the bougie it will be impossible to get a No. 3, or indeed one of the smallest size, even to enter the stricture. However gently an instrument may be passed through a highly-contracted stricture, from the irritation which is sometimes unavoidable, congestion or inflammation of the lining membrane at the seat of obstruction may ensue, so as for a time to render fruitless any attempt to penetrate the stricture without doing mischief. Under these circumstances, two or three gentle applications of the potassa fusa will often produce the very best effects, by relieving inflammation or congestion. The difficulty in dilating a stricture will depend much upon its irritability and predisposition to inflammation, but also upon its extent and hardness. The fibrous tissue, wherever formed from disease, is remarkably disposed to a certain degree of contraction, as is evident in cicatrices from burns ; and it is the extensive fibro-cartilaginous stricture which not only yields more slowly than others to the dilating power of the bougie, but

has also the greatest tendency to recontract. The stricture, if hard and extensive, must be very gradually dilated, and the transition from the introduction of an instrument of any number to that of the next size higher in the scale, will often produce so much irritation as for a short time to increase the contraction. It will be found very useful in practice to have bougies, sounds, and catheters, made of intermediate sizes of the common scale of the instrument-makers, as the gradation, according to that scale, is often greater than a stricture will bear without irritation.

As heretofore observed, before passing an instrument of larger size, the one last used should be previously introduced, and allowed to remain for a few minutes. We may rest assured, that, as a general rule, but little will be gained, and very often much time will be lost, by increasing the size of the instrument more rapidly than can be done with tolerable facility ; for if a stricture be much distended, irritation mostly ensues. I have sometimes endeavoured to hasten the dilatation of a stricture by increasing the dilating instrument two sizes higher in the scale, but seldom without having afterwards regretted it. The effect of over-distension upon a stricture is commonly to cause inflammation with a mucopurulent discharge, often mixed with blood, and the inflammation frequently extends along the

ejaculatory ducts to one or both testes. When the testes become inflamed from the introduction of instruments, it will be proper to allow the inflammation to subside before renewing any attempt to dilate the stricture, although, as will be noticed hereafter, a very different practice should be pursued when the testes have become enlarged from chronic inflammation extending from the stricture, and most probably caused by the irritation of the urine behind it. A little experience in the treatment of a stricture will soon determine at what periods it will be most advisable to renew the attempts at dilatation. With an impassable stricture, a patient is very liable to attacks of retention of urine, commonly caused by some indiscretion on his part, producing inflammation or congestion of the stricture, and probably spasmodic action of the neighbouring muscles. It sometimes happens that the irritation arising from the introduction of instruments will cause retention of urine, the treatment of which will be mentioned hereafter.

After having succeeded, with the aid of the *potassa fusa*, in getting an instrument into the bladder, there will be no further necessity for the use of that remedy, unless the stricture should become irritable, or but little progress be made in its dilatation, when the potash may often be reapplied with great advantage. The introduction of a bougie sometimes causes irritation ex-

ternal to the urethra, and subsequent abscess ; if so, the urethra should be left undisturbed by any instrument until an outlet be given to the matter, unless, indeed, retention of urine render it necessary to introduce a catheter. If it be deemed desirable to take a cast of a stricture before using the potassa fusa, a model bougie, with its point made softer than any other part, or a common soft bougie, the point of which has been previously softened by immersion in hot water, should be passed down to the obstruction and pressed against it gently for a few minutes. The bougie should be of a medium size. On withdrawing the bougie, it is probable that a small projecting process at its point will indicate the direction of the opening of the obstruction. Sometimes there is a second process projecting from the bougie, pointing out a false passage. The false passage is more frequently below than above the true one. If an artificial opening should unfortunately have been made in the urethra, pressure must be employed with extreme caution, unless the point of the bougie or sound be tightly grasped, when we are almost certain that the instrument is in the stricture. I do not often now use the model bougies, as much inconvenience, as well as suffering, has occasionally been caused by some of the softened composition having been left in the stricture ; and it appears to me that their employment is seldom indispensable. Care

must of course be taken that an enlargement of the prostate gland be not mistaken for a stricture, and if the bougie should be stopped at about seven or eight inches in an elderly person, the state of the prostate should be particularly examined. I have known such a mistake occasionally occur, when, after having in vain endeavoured to pass a small-sized bougie beyond seven inches, a full-sized prostate catheter, with its point well kept to the upper part of the urethra, has been readily introduced into the bladder.

As stricture sometimes causes disease of the prostate, the state of that gland in old people should, as far as possible, be ascertained. The division of an impassable stricture by a stilette pushed forward from the end of a catheter in which it had been previously conveyed to the obstruction, has been practised in many cases and strongly recommended by Mr. Stafford. Although the practice has been successfully carried into effect by that gentleman in several instances, it appears to me to be open to this very great disadvantage—especially if the stricture be beyond the straight part of the urethra—that it cannot be possible, in all cases, to ascertain if the cutting instrument be thrust forward in the right direction; and much mischief might result by cutting out of the proper line. If the *potassa fusa* should fail in enabling

the surgeon to get an instrument through the stricture, which will not often happen when that remedy has been used with the perseverance which I have ventured to recommend, other means of relief must be adopted. The division of the stricture will then be the best practice that can be pursued ; but it has always appeared to me, that its division from without is a more safe method of proceeding than its division from within. A catheter should be passed down to the stricture, and a free incision made in the perineum. The end of the catheter will serve as a guide to cut upon ; and when its point has been reached by carrying the knife forwards, the urethra, which is generally dilated, will be opened, when the instrument can be passed on into the bladder, where it should be retained for three or four days, and then replaced by another. If, after having cut upon the point of the catheter, a small director can be passed through the stricture, the obstruction can then be readily divided by a straight sharp-pointed bistoury or narrow scalpel. Sometimes it is with difficulty that even a very small probe can be got through the obstruction ; but if this can be done, it will facilitate the opening of the urethra by indicating its true course. Sir B. Brodie adopted the following method of dividing a stricture. After having made an incision into the membranous portion of the urethra, he put his

finger into the canal with his nail turned towards the stricture and pressed against it. He then passed a straight catheter with a lancet inside, which admitted of being thrust forward at will as far as the obstruction, through which the lancet was pressed until it reached his finger : a gum catheter was then passed along the urethra into the bladder. It is in the impassable stricture that severe attacks of retention of urine are most likely to occur ; consequently, every means must be adopted for the prevention as well as relief of irritation and inflammation. When a patient applies with a stricture of this kind, it will be the best plan to order a dozen leeches at once to be applied to the perineum, and, afterwards, warm fomentations. One or two grains of calomel, and twelve of Dover's powder, should be given at bedtime for a few nights, followed by a draught of Epsom salts and infusion of senna in the morning. The leeches should be repeated once a week or fortnight, or oftener, if the inflammation be severe ; in which case, the patient should be kept in the recumbent position. The remedies before mentioned for the correction of the urine, if required, should be administered with similar precautions.

This treatment having for its object the relief of irritation and inflammation, it will be necessary, in some cases, to have recourse to occasionally during the greater part of the time

a stricture is in progress of dilatation ; although, in many instances, all will go on smoothly with a careful patient, after an instrument has been once passed into the bladder. If the Dover's powder should cause much sickness, a grain or a grain and a half of opium may be substituted for it. During the attacks of irritation, I generally advise the patient to have the following decoction made for his ordinary beverage : an ounce of pearl barley, half an ounce of gum arabic, with a little lemon-peel, is to be boiled for a few minutes in a quart of water ; then strained, and sweetened to his taste. The more the stricture is dilated, the less necessity will there be generally for the strict enforcement of the above treatment.

Irritable Stricture.—The surgical treatment of this stricture must be conducted with more than ordinary gentleness and caution, or the patient will be but little benefited. In many cases of irritable stricture, the potassa fusa will be found a most useful remedy ; three or four applications of it very much diminishing, if not entirely removing, the irritability of the stricture. If the stricture bleed freely on moderate pressure, the bougie containing the potash should be passed quickly down to the obstruction, and lightly pressed against it for half a minute. The application should be repeated at intervals of four or five days, as long as the

hæmorrhagic disposition of the stricture continues. The potassa fusa will, however, fail in some cases of irritable stricture, as will also every other remedy, unless the contact of the urine with the lining membrane of the stricture be prevented. Sir B. Brodie and Mr. Guthrie, having observed that the rigors occasionally occurring in persons with irritable strictures, from the introduction of instruments, scarcely ever appeared until the patient had passed his urine, strongly recommended that as large a gum catheter as can be borne without irritation, should be afterwards kept fixed in the urethra, so as to prevent the urine, as much as possible, from passing directly over the seat of disease. If the lining membrane of the bladder will bear the presence of a foreign body, the catheter may be retained; but should there be much irritability, the end of the instrument must only be advanced a little beyond the stricture, and pushed forward when it is necessary to draw off the urine. The great and immediate relief of withdrawing a catheter from an irritable bladder can be appreciated by those only who have felt the comfort of it. This method of proceeding will almost invariably succeed in preventing the occurrence of rigors after the failure of all other means. The size of the catheter must, of course, be gradually increased, and every available measure adopted

to improve the state of the patient's general health.

The common method of fixing a catheter in the bladder is by passing a band round the waist, and a couple of pieces of tape through the rings of the instrument; the tapes are then carried behind the thighs and secured to the circular belt on each side. A very simple and effectual method is adopted and recommended by Mr. Guthrie for retaining a catheter or bougie, at any distance that may be required. "The catheter," he observes, "which need rarely exceed eight inches, should have a silver extremity, to which two rings are affixed, and to each of which a piece of strong bobbin, ten inches long, is to be attached. The catheter being introduced to the proper distance, the two pieces of bobbin are to be carried backward along the sides of the penis as far as the pubes; a narrow slip of sticking-plaster is then to be bound round the middle of the penis and over them, so as to keep them fairly to it. The ends of the bobbin are then to be turned forwards to the outside of the plaster, when they may be tied together on the end of the catheter, which is steadily fixed in its place, subject to any motion of the part generally with which it moves as a whole; or an elastic band may be buckled or sewed around the penis, with hooks

attached to it through which the threads may run."

It sometimes happens in highly contracted and rigid strictures of long standing, that, after having succeeded in dilating them to a certain extent, no further progress can be made; for when attempting to increase the size of the dilating instrument, the irritation which ensues has the effect of augmenting the contraction for a time. Sometimes a few applications of the potassa fusa will enable us to go on with the dilatation; but occasionally, notwithstanding the use of the remedy, but little progress can be made beyond a certain point. I have at present under my care two cases of stricture, which had long been impervious to instruments. By the use of the potassa fusa, I have been enabled to get as far as the introduction of a No. 6 steel sound, which can be passed without irritation; but if an instrument of only half a size larger be introduced, the strictures become invariably for a short time more contracted. The irritation produced by the slight extra dilatation is kept up by the urine passing over the irritable surface; and on the next attempt to introduce an instrument at the end of five or six days, the number which could be passed with facility before the attempt at further dilatation, can then scarcely be made to enter the stricture, where it is firmly grasped as in a

vice. One application of the potassa fusa has generally enabled me to get back to the standard point of dilatation which these strictures seem to admit of without irritation.

The proper management of such cases as these, where it can be accomplished, is to keep a catheter in the bladder ; or, at all events, beyond the stricture, so as to prevent the urine from passing over the irritable surface at the seat of disease ; but this plan cannot often be adopted with dispensary patients. I have, in similar instances, eventually succeeded in dilating such strictures by the occasional application of the potassa fusa ; by prolonging the intervals between the introduction of instruments to ten days or a fortnight, and by the employment of such general remedies as are found most effectual in relieving inflammation and irritability of the lining membrane of the urethra. Whenever in such cases a catheter can be kept in the stricture, it will generally prove highly advantageous to the patient. When the catheter causes much irritation, it must be withdrawn for a time, and general soothing remedies adopted. The catheter should be changed every third or fourth day, as the openings in the instrument are apt to get encrusted with calculous matter. Although a gum catheter is generally preferable to one of harder materials, yet, when a stricture is extensive and rigid, a silver catheter can be more easily intro-

duced. Any stricture may become irritable ; either from causes which disturb the general health ; from the irritating qualities of the urine, which may be either too acid or too alkaline ; or from direct injury to the stricture, mostly caused by the introduction of instruments. From what has been previously observed, it can readily be imagined that these strictures require the greatest degree of patience, judgment, and forbearance in the surgeon. The good effects frequently experienced from one or two gentle applications of the potash, are in many cases very remarkable. In the irritable stricture very great advantage is derived from the administration of opium. With the occasional application of leeches to the perineum, much good will often be effected by giving five grains of Dover's powder, ten of powdered gum arabic, and ten of carbonate of soda, in a little barley-water, three times a day, unless the urine be alkaline, when the soda should be omitted. As this stricture frequently occurs in persons whose general health is much impaired, change of air is often serviceable, and during the intervals of the attacks of irritation every means should be adopted to strengthen and improve the state of the digestive organs. Vegetable acids, as well as salted meat, as being too stimulating to the urinary organs, should be avoided by persons with irritable or highly contracted strictures.

In many cases, suppositories containing two or three grains of opium, or opiate enemata, composed of forty or fifty drops of tincture of opium, in two or three ounces of warm gruel, are exceedingly useful. The same precautions as previously recommended should be taken to guard against cold or vicissitudes of temperature. It is in this stricture that rigors most frequently occur. After passing an instrument in persons predisposed to the occurrence of rigors, a full dose of opium should be given; and after the cessation of the paroxysm, the administration of the sulphate of quina, with sulphuric acid, and the compound infusion of gentian, has appeared to me often to have the effect of preventing future attacks. If the bark fail, it may be combined with the liquor potassæ arsenitis. Although, as observed by Sir. B. Brodie and Mr. Guthrie, the rigors can be prevented by keeping a catheter in the bladder; yet this cannot always be done, especially with poor people; therefore it is in every respect desirable to endeavour to fortify the constitution against their recurrence.

Inflammatory Stricture.—In this stricture no surgical interference with the urethra is admissible, unless retention of urine should occur. Under such circumstances, from a fear of increasing inflammation, many surgeons entertain a strong objection to the use of the catheter, and

prefer having recourse to every other means of relief before attempting its introduction. I believe that such a fear is groundless; for the constant straining of the patient, combined with the spasmodic action of the bladder, will do much more harm than the contact of an instrument with the inflamed urethral membrane; besides, the immediate relief which invariably ensues, if a catheter can be got into the bladder, very satisfactorily establishes the propriety of at once having recourse to it. I can only say that making the case my own, and supposing myself to be suffering from retention of urine in consequence of inflammatory stricture, before adopting more indirect means of relief, I should not rest contented until my mind had been first fully satisfied that it was impossible, without violence, to pass a catheter. The abstraction of blood from the perineum, either by leeches or by cupping, is the most essential part of the treatment, the whole of which should be strictly antiphlogistic, aided by rest in the horizontal position. The patient should be desired to drink freely of the barley-water beverage; and the combination of soda, gum arabic, and Dover's powder, will generally afford great relief. Warm fomentations to the perineum are productive of much comfort. The best manner of using them is to have two flannel bags half filled with hops or camomile flowers steeped in hot water, or

poppy fomentation, and alternately applied, as hot as can be borne, without pain, from a quarter to half an hour at a time.

Stricture with marked disposition to Contraction.—In the management of this stricture, I have seen great advantage derived from the occasional application of the potassa fusa, which has rendered it more dilatable, as well as apparently diminished its contractile tendency. I have before observed that the hard fibrous stricture is the most prone of all to return, and at the same time endeavoured to give some explanation of its strong tendency to contract. When the stricture has been dilated as much as possible, to guard against a relapse, the patient should be particularly cautioned as to the necessity of an occasional introduction of the bougie. But little is to be done by medical treatment unless irritation or inflammation ensue, when they must be combated by the means previously recommended.

Spasmodic Stricture.—I have often found the potassa fusa very useful in diminishing the tendency to spasm, as well as relieving it when present; and a few gentle applications of the remedy, once or twice a week, have frequently been attended with signal advantage. If the potassa fusa fail in relieving the spasm, the nitrate of silver may be tried. The general surgical management of the spasmodic must be

similar to that of the irritable stricture, the latter being remarkably predisposed to spasm. When introducing instruments in strictures subject to spasmodic action, they should be lightly and quickly passed down to the obstruction, which, if thus taken by surprise, will often yield; whereas, if a more slow proceeding be adopted, the bougie would very probably either not enter the stricture, or, if it did, might then be so firmly grasped as to prevent its further advance. Opium, being the best antispasmodic we possess, is a most valuable remedy in this stricture; and is often given with great advantage, not only by the stomach, but also as a suppository and enema. It will not be necessary to enter minutely into the treatment of the spasmodic stricture. Warm anodyne fomentations frequently applied, with the occasional application of leeches to the perineum, the free administration of opium at bed-time, in combination with ipecacuanha and camphor, followed by the salts and senna draught in the morning, are the principal means to be relied upon in the medical conduct of the disease.

Stricture from Injury to the Urethra.—If there be an external wound communicating with the urethra, the greater part of the urine will, of course, pass through the opening. If the external aperture be small, it should be enlarged so as to prevent infiltration of urine. If the

urethra should be lacerated without any external wound, the mischief will be indicated by hæmorrhage from the penis, with commonly more or less fulness in the perineum, and the patient will generally either be unable to pass his urine, or it will be voided with great difficulty. Under such circumstances it will be highly desirable, without loss of time, to get as large a catheter into the bladder as the urethra will bear without irritation; and the instrument should be retained there. If the attempt to pass a catheter should fail, and the patient be unable to void his urine, a free incision must be made in the perineum, which will, in all probability, give vent to extravasated blood and urine. If possible, a catheter should then be passed along the urethra into the bladder, and retained for some time. From neglecting to pass the catheter before the patient has made water, it is very probable that the inflammatory swelling which ensues may cause the bladder to become distended.

It may, then, not only be impossible to introduce a catheter along the natural passage into the bladder, but it may be equally impossible to succeed by an incision in perineo, for that part of the urethra behind the laceration cannot always be found in consequence of the swollen state of the parts. The only means then left the surgeon for the relief of his patient is to puncture the bladder, which should be done by the rectum,

that method being generally regarded as less hazardous than the operation above the pubes. As inflammation is the principal evil with which we have to contend, the most active means for its relief must be adopted; and, besides local bleeding from the perineum, it will frequently be advisable to take blood from the arm. The bowels should be kept freely open, and the whole of the antiphlogistic plan of treatment more or less strictly enforced, according to the severity of the injury, or its probable consequences.

CHAPTER VII.

CONSEQUENCES OF STRICTURE.

THESE may be the result of the disease itself, or of the treatment employed. One of the most important of these consequences is

Retention of Urine.—There are few situations in which a man can be placed more dreadful than that where he is suffering from an over-distended bladder, with complete inability to discharge its contents. It is a state truly pitiable; and the mental and bodily agony often endured are beyond description. There is no situation in which more urgent and affecting appeals for immediate relief are made to the surgeon, in whose hands, under Providence, the fate of the patient is placed. It is all very well to read in books of the employment of the warm bath, bleeding, opiates, and other antispasmodic remedies; but urged by the most affecting entreaties for instant relief, and witnessing in the expres-

sion of the patient's countenance the horrible tortures of his mind as well as body, no man, I should imagine, under such circumstances, with the catheter in his hand, would hesitate a moment to attempt at once to release the sufferer from his agony, instead of proceeding *secundum artem* by slower and less effective measures. Under whatever circumstances retention of urine may occur, it appears to me that every other means of relief being more slow in their operation should be made subordinate to the introduction of the catheter; and that not until after persevering but gentle attempts to introduce the instrument have failed, should we employ those more subordinate measures. The first trial should be made with a small gum-elastic catheter, at first without its stilette, but if it cannot thus be made to pass, it must be tried with the stilette. If these should both fail, an attempt must be made with a small silver catheter, which must be used with gentleness but perseverance; for it often happens that after steadily pressing the instrument against the stricture for a few minutes, it will at last enter the obstruction, and most probably, by gradually continuing the pressure, eventually pass on into the bladder, where it should be retained, and every other means adopted calculated for the relief of the patient. If, fortunately, the catheter can be got into the bladder, it will prove the very best sedative, by

taking off from the stricture the constant irritation arising from the pressure of the urine. If the catheter cannot be passed, what is then to be done? An attempt should be made with the smallest sized bougie to penetrate the stricture. If the point of the instrument can be made to enter the obstruction, it should be allowed to remain for a few minutes, and withdrawn during the patient's endeavour to make water, when, very often, the urine will follow in a very small stream. This is almost the only case in which I use the catgut bougie, which must be very gently managed, to avoid tearing the urethra; but if it can be got into the stricture, from its becoming soft and swollen, it will in a slight degree dilate the commencement of the stricture, which very often causes relaxation of the whole. If, however, the catgut bougie fail, one of plaster should be tried, always bearing in mind the necessity of varying the point of the instrument. If it be found impossible to relieve the patient by the introduction of instruments, what is to be done? I can strongly recommend, from much experience of its good effects on such occasions, the employment of the potassa fusa, which should be pressed lightly against the stricture from half a minute to a minute. I prefer the potassa fusa to the nitrate of silver, for reasons previously stated. The bowels should be well emptied by an enema made with two ounces of Epsom salts and an

ounce of castor oil in a pint and a half of warm gruel; and after its operation, from fifty to sixty drops of laudanum, in rather less than a quarter of a pint of gruel, should be injected into the rectum. Five grains of Dover's powder with ten of carbonate of soda should be administered every second or third hour, so as quickly to bring the patient under the influence of opium. Immediately after the operation of the enema, a dozen leeches should be applied to the perineum, and warm fomentations afterwards sedulously used. The hot hip-bath has often a very good effect in these cases.

When this plan of treatment has been carried into effect, and the patient has become fairly under the influence of opium, the probability is, that some drops of urine will be passed, which will generally be followed by more, until at length it flows for a few seconds in a very fine stream, and the straining and spasmodic contractions of the bladder are much relieved. By keeping up the influence of opium, by repeating the fomentations and hot hip-bath, more complete relaxation of the stricture generally soon takes place, and the patient has at length the unspeakable gratification of emptying his bladder.

It was a favourite practice of the late Mr. Cline, in retention of urine caused by spasmodic stricture, to administer twenty drops of the tincture

of muriate of iron every hour or two, as an antispasmodic ; but it seems to me that the opium is to be preferred. If the means hitherto described fail in satisfactorily emptying the bladder, for the discharge of a few drops or two or three ounces of urine is not sufficient, as the kidneys will in that case most probably secrete more urine than is voided, something further must be done to relieve the patient. The rupture of the urethra behind the stricture is what we have to fear ; and the question is, how long are we justified in employing the measures hitherto recommended, before adopting a more certain method of relieving the bladder ? Are there no means by which the degree of distension of the bladder is to be ascertained ? A reference to the pathology of stricture answers the question in the negative, as the common effect of the disease, when long continued, is to cause such a contracted and thickened state of that viscus, that when distended to the utmost, it is scarcely to be felt above the pubes. The urgency of the symptoms, and the time which has elapsed since urine has been passed in any quantity, are the only guides to be depended upon. Considering the unhealthy state of the mucus membrane behind the stricture, with the forcing of the urine against it by the spasmodic action of often a highly hypertrophied bladder, assisted by the contraction of the abdominal muscles ; if no urine beyond a few

drops has been passed, we shall scarcely be justified in waiting much beyond two days before resorting either to the puncture of the bladder or opening the urethra. Which of these operations are we to adopt? Is one more free from danger than the other? That the puncture of the bladder in any situation, and performed in the best possible manner, is not entirely exempt from danger, especially when that viscus is much contracted, will readily be admitted. That the opening of the urethra in a proper manner is not attended with anything like the same degree of hazard, every practical surgeon will also admit. Can there, then, be a question as to which operation should be performed, the comparatively safe or the unsafe one? For the operation of opening the urethra for the relief of a distended bladder arising from stricture we are indebted to the practical genius of our unrivalled surgeon, Sir A. Cooper, an operation equally happy in its conception as in its success. If, as is very commonly the case, the urethra be dilated behind the stricture, the operation is a very simple one, unless the obstruction be far back, when a little dissection is required. The manner of cutting into the urethra, as also the division of a stricture, has been previously described. In the first case operated on by Sir A. Cooper, the proceeding was very simple: after having made an incision in the perineum, he put his finger in the wound,

and then desired the patient to attempt to make water, when the dilated part of the urethra becoming apparent from the distension caused by the urine, it was opened with a lancet, when that fluid flowed freely from the wound. The stricture soon becomes more yielding after the opening behind it has taken off the great pressure of the urine, which soon flows in part by its natural passage, and the obstruction can then invariably be dilated, as has previously been observed. It is an opportunity that should not be lost; for the stricture, which was firm and unyielding whilst the urine was forcibly propelled against it, after such pressure has been removed, will in general readily admit of dilatation. The occasional application of the potassa fusa will, however, greatly facilitate the process of dilatation. If in a case of over-distended bladder, as often unfortunately happens, relief is too long delayed, we have a still more formidable evil to contend with, viz.

Ruptured Urethra.—If a patient with an over-distended bladder from stricture be left to himself, the urethra almost invariably gives way behind the obstruction, either by ulceration or rupture; and the urine generally very quickly infiltrates the cellular membrane, where it can find a free passage. Whilst the patient is violently straining, he suddenly becomes relieved, and fancies that his urine is passing; but, on

examination, finds that none is flowing by the natural passage, and his mistake is soon discovered by the swelling of the perineum, scrotum, and penis, which quickly supervenes. Under these circumstances not a moment should be lost. A free and deep incision must be made in the perineum ; the superficial fascia must be well divided, so as to give ample room for the escape of the acrid and often highly putrid urine. The integuments of the scrotum, and wherever the urine has been extravasated, must be freely incised. A catheter, if possible, should be got into the bladder, and retained there for four or five days, when it should be changed for another. If, however, the catheter cause irritation, it must be withdrawn. A full dose of opium should be given, and the constitution of the patient must be supported by every possible means. The bowels should be kept open with enemata, and camphor and ammonia, in addition to the opium freely administered. The shock to the constitution being very considerable, the nervous system becomes much affected, and the muscular powers of the patient are prostrated. Strong beef-tea, wine, and occasionally brandy, must be given to support the enfeebled powers of life. If the sufferer should fortunately survive the shock which his constitution has sustained, as soon as the nervous system has become tranquillized, the sulphate of quina and other tonics

may be administered with as generous and nutritious a diet as the digestive organs will bear without irritation. The local effects of extravasation of urine are more or less sloughing of the integuments, which that highly acrid fluid rapidly destroys. The local mischief must be treated in accordance with the common principles of surgery. Sometimes, from the condensation of surrounding parts, the urine escapes from the urethra more slowly, and urinary abscess is formed. In cases of retention of urine from stricture, the perineum must be carefully examined; and if there be any swelling, or the patient complain of fulness in that region, although no tumour be apparent, a free and deep incision to the extent of an inch and a half should be made through the superficial perineal fascia. As urinary abscesses frequently form without retention of urine in consequence of stricture, prompt attention should always be paid to any swelling or sense of weight in the perineum, and an early and free opening made. In consequence of the urine finding its way through the openings formed by these abscesses, they are usually very slow in closing, and terminate in

Urinary Fistulæ.—These fistulæ will, in general, gradually contract as the stricture becomes more open; and by the time it is fully dilated, or soon afterwards, they will often heal without

further trouble. Occasionally, however, a few drops of urine will still find their way through the fistulous channels after the stricture has been dilated; and it then becomes necessary to adopt means to close them. A very good plan of treating these fistulæ is to moisten a probe in water, then dip it in powdered nitrate of silver, and pass it along the fistulous tracks. The nitrate of silver may be repeated once a fortnight or three weeks, if necessary. I have tried the nitric and sulphuric acids, and find the nitrate of silver preferable. When the nitrate proves unsuccessful in closing the fistulæ, a heated wire should be passed as near as possible along the whole track of the fistulæ, which will produce a thin slough. The contractile process being slow, the improvement will of course be equally so. In some instances it will be necessary to repeat the use of the hot wire. If the fistulæ open into the rectum, the speculum ani must be used.

Inflammation of the Testes. — Inflammatory enlargement of these organs is a very common consequence of stricture, and may be either the result of the stricture itself, or of the treatment employed. If from the former, it is generally chronic, the enlargement taking place gradually, and not usually attended by much pain; but when from the latter, the inflammation is in general more acute, the pain more severe,

and the swelling more rapid. When inflammation of the testis is acute and caused by the introduction of instruments, from a dozen to eighteen leeches should be applied to the inflamed part; and afterwards, warm poppy fomentations and poultices. The rectum should be suspended, and the horizontal position strictly enforced, when practicable. A draught should be given every four hours, containing from a quarter to half a grain of emetic tartar, two drachms of Epsom salts, and twenty drops of the wine of colchicum, in an ounce of camphor mixture. Twelve grains of Dover's powder, with two of calomel, should also be given at bedtime. The leeches must be repeated in a day or two, if there should be much pain or swelling. Warm applications generally afford more relief than cold, by relaxing in some degree the tunica vaginalis, the rapid distension of which often causes much suffering. The urethra should be left undisturbed by any instrument until the subsidence of the inflammation. When the enlargement of the testis is not caused by the introduction of instruments, but results from inflammation extending from the stricture along the ejaculatory ducts to that organ, and is of a chronic kind, a very different treatment must be pursued. The inflamed testis has often a schirrus-like hardness, and the pain is then seldom constant, but often occurs in

paroxysms, at times severe. In this chronic enlargement of the testis, mercury is almost a specific, and seldom fails, when the patient is fairly under its influence, of causing absorption of the effused lymph, and the gradual restoration of the inflamed organ to its healthy state. As the inflammation has been produced by the irritation caused by the pressure of the urine against the stricture, by proceeding in its dilatation, and, consequently, diminishing such pressure, we shall greatly facilitate the action of the mercury in curing the disease. The stricture should therefore be gradually dilated by the bougie or sound, as if it were uncomplicated with inflammation of the testis. The good effects of the dilatation of the stricture, under these circumstances, I have witnessed in a great many cases.

When the swelling is of a chronic character, the application of leeches will seldom be advantageous ; but the part affected should be covered with flannel spread thickly with camphorated mercurial ointment, over which a piece of oiled silk may be placed. If, as sometimes happens, paroxysms of rather acute pain be experienced, a fourth part of extract of belladonna should be added to the camphorated mercurial ointment. In all cases of inflammation of the testes, those organs should be suspended ; and, when practicable, unless the swelling be of a very chronic

character, the recumbent position should be enjoined.

Hæmorrhage from the urethra.—Discharge of blood from the urethra in stricture is generally caused by the introduction of instruments, and when the armed bougie was in common use, severe hæmorrhage sometimes followed the separation of the slough. In some instances the lining membrane at the seat of disease is so extremely vascular, that a few drops, or teaspoonfuls, of blood will flow, however gently an instrument may be passed ; which state of inflammation or congestion is best relieved by a few slight applications of the potassa fusa. This slight bleeding is of no consequence whatever, but is indicative of a highly congestive or inflammatory state of the stricture. If, as sometimes happens, in attempts to dilate a stricture, the lining membrane of the urethra should be lacerated, a more free discharge of blood then takes place, and may proceed to such an extent as to cause much alarm to the patient and his friends. As blood and urine coagulate together in equal proportions, the loss of blood is often supposed to be double what it really is.

Sir E. Home, who probably used caustic to a greater extent and more boldly than any other surgeon, in his Clinical Lectures delivered at St. George's Hospital, declared that he never knew hæmorrhage from the urethra to prove fatal. I

have never seen any of those profuse discharges of blood which have been described as sometimes produced by the application of caustic, but have occasionally witnessed considerable hæmorrhage from the introduction of instruments. Although these hæmorrhages are most frequently the consequence of treating a stricture rather too roughly, yet it must be admitted that they may occur when no improper force has been used, and when the introduction of the bougie, which caused the bleeding, has given the patient scarcely any pain or uneasiness. Some persons seem peculiarly predisposed to hæmorrhage from the mucous surfaces, and when a small vessel or vessels give way, the discharge of blood continues unusually long. However alarming these discharges from the urethra may be to the patient and his friends, by the surgeon they are regarded as of little importance, for he well knows that in ninety-nine cases out of a hundred it is in his power very quickly to stop the bleeding. If called to a patient with rather profuse hæmorrhage from the urethra, effectual means must be taken to suppress it, which can readily be done by the application of pressure on the proper place. The closed fingers should be placed as far backward as possible on the perineum and gradually brought forward, making firm pressure on the urethra all the time, until the flow of blood from the penis ceases, which will be a

proof that the bleeding vessel or vessels are compressed. Particular care must be taken that the pressure be made upon the precise spot from whence the hæmorrhage proceeds; for if made anterior to it, although no blood may escape from the penis, yet it will pass backward into the bladder. To avoid such an occurrence, when the flow ceases it is only necessary to move the fingers a little backward until the discharge again takes place, by which means the exact situation where the pressure should be made can always be ascertained.

If, as rarely happens, it be impossible to command the flow of blood by pressure, in that case the bleeding must proceed from the back part of the urethra, at the prostate or neck of the bladder; when, should it have been caused by the introduction of instruments, it will in general soon cease on the application of cloths dipped in cold vinegar and water to the perineum and lower part of the abdomen; or, should the hæmorrhage be profuse, and not easily suppressed, pounded ice in a bladder must be applied, and a full dose of opium with the superacetate of lead administered. It is seldom necessary to continue the pressure for any length of time. I have generally made the pressure myself, or directed an assistant to do it; but should this be inconvenient, the patient can readily manage the business himself with a firm

compress, made with a flat narrow piece of wood or cork, wrapped in lint or linen. Blood sometimes finds its way into the bladder, and coagulates there, causing much distress.

The proper practice to be pursued in such a case is to inject the bladder with warm water. A double catheter should be used, and moved freely about the bladder, for the purpose of breaking the coagula before injecting the warm water. When these hæmorrhages occur, the patient is often for some time incapable of making water, when, after considerable straining, some coagula are passed, and the urine may then flow freely. Hæmorrhage from the bladder is not a common consequence of stricture. A case, however, occurred to me some time ago, where it was so indirectly. I was requested to see a poor man, who had considerable discharge of blood from his bladder, which he said was caused by lifting a heavy weight. Notwithstanding the exhibition of full doses of opium with the superacetate of lead as well as the constant application of vinegar and water, and afterwards of ice, to the perineum and lower part of the abdomen, the hæmorrhage still continued unabated, and it became evident that the man would soon sink, unless something further was done for him. It then occurred to me that injecting the bladder with some powerful astringent might probably succeed in stopping the flow of

blood. On proceeding to inject the bladder with a solution of a drachm of alum to half a pint of water, I found a stricture at the bulb, through which a No. 3 catheter was passed with some difficulty. After the first injection scarcely any blood was passed for three days, when a slight return of hæmorrhage occurred; and as the man had been much exhausted by the previous loss of blood, I repeated the injection, after which there was no return of the bleeding. In this case it is most probable that the mucous membrane of the bladder was in a state of congestion or inflammation, from the obstruction caused by the structure to the free discharge of the urine, and that viscus having been distended at the time of the injury, some vessel or vessels were ruptured by the compression.

False Passages.—These are generally formed by unjustifiable violence in the use, or rather abuse, of instruments. They are most commonly found at the bulb; and are caused by the end of the catheter or bougie having been allowed to sink too low at that point; and, when forcibly urged forward, a false passage has been made, passing under or by the side of the membranous portion of the urethra. Another situation in which a false passage has often been made, is at the termination of the membranous portion of the urethra, the artificial channel passing through a perforation of the prostate into the bladder.

It is easy to conceive the probability of the lining membrane of the urethra being occasionally ruptured in passing an instrument ; but it is not so easy to imagine the probability of a long passage being bored in the wrong direction. When the lining membrane of the urethra is torn by the point of the bougie or catheter, the peculiar sensation communicated to the hand cannot well be mistaken by any one accustomed to the treatment of stricture. If the mucous membrane of the urethra should be lacerated, which occurrence must have happened occasionally to every experienced surgeon, the instrument should be immediately withdrawn, and the urethra left quiet until the breach of surface have time to heal. The triangular ligament is the stumbling-block of those unaccustomed to the frequent introduction of instruments into the bladder ; and sometimes may cause obstruction in more practised hands ; for if the point of the instrument be not well kept to the upper part of the urethra, it is apt to sink into the sinus of the bulb, and to catch against that ligament.

A dispensary patient of mine, of a hypochondriacal turn of mind, who was under my care with a stricture of his urethra, came to me one morning in very great alarm, with an expression of countenance that seemed to portend some terrible disaster. As soon as his extreme agita-

tion permitted him to use his tongue, I learned that he had been to consult another surgeon, who, after having attempted to pass a catheter, assured him that there was no possibility of getting an instrument into his bladder, and that a false passage had been made. The gentleman was also kind enough to show him some plates, by which he explained geographically the precise road the instrument I used had taken, and concluded by assuring him that the channel to his bladder was impassable. The man's story somewhat surprised me, as two or three days before, I had passed a No. 11 steel sound into his bladder without the slightest difficulty. To convince him that his fears were groundless, in the presence of one of my pupils I passed very readily a No. 11 silver catheter into his bladder, and as there happened to be a few ounces of urine in it, his satisfaction equalled his astonishment, when the water flowed freely through the instrument.

Ulcers on the Glans and Prepuce.—The ulcers dependent upon morbid thickening of the urethra are most frequently of the herpetic kind, and are sometimes very troublesome to the patient from their frequent recurrence. If accompanied by surrounding inflammation, the acetate of lead lotion is a very good application. When of a mere chronic character, stimulants should be used, such as the black wash, the nitrate of silver

or sulphate of zinc lotions, containing from two to six grains of the salts to the ounce of distilled water. As these ulcers often occur when the digestive organs are impaired, considerable attention should be paid to their correction. If the ulcers become very indolent, they may be touched occasionally with the solid nitrate of silver. In many cases, however, the recurrence of the ulcers can only be prevented by the restoration of the urethra to its healthy state.

Gleet.—Persons with stricture are often troubled with a gleety discharge of vitiated muens, sometimes mixed with pus. As this gleety discharge is a consequence of the obstruction in the urethra, it generally subsides when the stricture is cured. In addition to the introduction of the bougie, the same remedies, with the exception of injections, are applicable to the treatment of gleet, when consequent upon stricture, as when independent of that disease. The remedies will be mentioned in the treatment of the common form of gleet succeeding gonorrhœa, which is so similar, that a few observations upon this subject may be advisable in this place. Gonorrhœa often subsides into a chronic discharge of a protracted and exceedingly troublesome character. The disease seems to consist in chronic inflammation or congestion of the muciparous glands and lining membrane of the urethra, accompanied with more or less mucous

or muco-purulent discharge. The scalding sensation so painful in gonorrhœa when the urine passes over the inflamed membrane, is seldom experienced in gleet, except from an accession of inflammation, which is apt to occur occasionally from some excess or other. The discharge at times is very trifling, generally of a whitish colour at first, but usually causing a pale yellow stain upon the linen. This disease, trivial as it may appear, has often for a long time baffled the skill of the ablest surgeons. In persons of weak constitutions, with a disordered state of their digestive organs, gleet is most likely to show itself in a protracted form. The discharge may arise merely from an increased secretion of the mucous glands of the urethra, probably from a slight degree of congestion of their vessels. In other cases, the discharge is more considerable, and the mucus, more or less vitiated, has often a purulent appearance.

Gleet, although usually causing scarcely any suffering, is attended with many present inconveniences, and may often eventually produce stricture. The gleet succeeding gonorrhœa is frequently infectious; and as long as any discharge remain, the patient must be informed of his liability to communicate infection. This point has been strongly enforced by Sir A. Cooper in his incomparable Lectures on Prac-

tical Surgery. For two especial reasons, therefore, it is highly desirable to put a stop to gleet ; firstly, because of its infectious character ; and secondly, from its liability to cause stricture. The means to be adopted for its removal are both general and local. The former comprise such remedies as, by their stimulating effects upon the mucous surface of the urinary organs, have proved most successful in causing contraction and a healthy action of the congested vessels. Of these remedies, the copaiba balsam stands first upon the list ; next the cantharides ; then the cubebs ; after which follow iodine, quinine, sarsaparilla, iron, and the various tonic remedies. Each of these medicines, separately employed, may fail in curing the disease, when a judicious combination of them will often succeed. The combination of medicines of the same class is often attended with most successful practical results. For example, I have occasionally failed in procuring sleep for the restless sufferer from pain and anxiety, by the separate exhibition of the various preparations of opium, camphor, the extracts of henbane, hemlock, or poppy ; when by the administration of half a grain of acetate or muriate of morphia, with five grains of the extracts of poppy and henbane, the desired effect has been produced. So it is with stimulating remedies in gleet ; when tried

individually, each will very probably fail, when in combination they will often prove successful. I have found the balsam of copaiba, with the tinctures of cantharides and muriate of iron, more generally successful than any other internal remedy in the cure of gleet not dependent upon stricture. If the above combination should fail after a fair trial, the tincture or the powder of cubebs may be substituted for the tincture of the muriate of iron. The above remedies must of course be made as little disagreeable as possible, by the addition of syrup and any aromatic water that may be most pleasant to the patient. In scrofulous persons, very excellent effects are often experienced from a combination of the iodide of potassium, with the compound extract of sarsaparilla, the tincture of cubebs, and compound infusion of gentian. The most efficient local remedies are injections of the nitrate of silver, the bichloride of mercury, the sulphates of zinc, copper, and alum; also the acetate of lead. These injections should be used successively, as one will often succeed where another has failed. The injection should be retained in the urethra one or two minutes. The occasional introduction of the bougie has often a most excellent effect in these chronic discharges. It has been recommended to besmear the bougie with balsam of copaiba and other substances;

but I do not think much good is derived from the practice. The pressure of the bougie seems to remove the congestion or chronic inflammation of the urethra, and will sometimes succeed when other remedies have failed.

C A S E S.

CASE 1.—*Impassable Stricture.*

MR. L. applied to me, July 20, 1827, under the following circumstances. He complained of great difficulty in making water, the urine passing generally by drops, or for a few seconds; in a very minute stream during the day, and constantly dribbling away in the night. The man attributes his disease to a gonorrhœa which he had contracted twelve years ago, having suffered more or less ever since; but during the last two years his sufferings have been much increased from an almost incessant desire to pass his urine. On examination, a stricture was discovered about two inches from the orifice of the urethra, through which obstruction no instrument could be passed. The potassa fusa was applied to the stricture, and retained for two or three minutes. The potassa fusa was again ap-

plied on the 22nd ; and on the 24th a No. 2 silver catheter was passed through the stricture to the membranous portion of the urethra, but could not be got further. After having a little dilated the first stricture, a No. 4 bougie, armed with the potassa fusa, was applied to the second stricture. Ten applications of the potassa fusa, at intervals of three or four days, were necessary before the second obstruction would yield, when a No. 2 silver catheter entered the bladder with some little difficulty, the instrument passing over a hard rough surface at the membranous portion of the urethra. The case was afterwards easily managed, the strictures having been gradually dilated by the introduction of steel sounds and silver catheters. On the 10th of November, a No. 13 steel sound was passed with facility. The patient called upon me occasionally during the following year, when the same sized bougie was used. He has never had any return of his disease ; and at his request, about six months ago, I introduced a full-sized bougie into his bladder.

CASE II.—*Impassable Stricture, with retention of Urine.*

James Golding, aged 65, applied to me, March 12th, 1834, with retention of urine from stricture, which disease, from his account, had

been of thirty years' duration. On his application to me, he had been unable to pass any urine for nearly two days, and had, during many months, suffered great pain when making water, which came away by drops, seldom more than a teaspoonful or two at a time in the day, whilst in the night it was constantly dribbling away. On examination, an impervious stricture was found about an inch from the orifice of the urethra, to which the potassa fusa was applied. A few hours after its application, a small quantity of urine was passed by drops, and during the night a considerable quantity dribbled away. The potassa fusa was used every day; after the sixth application, a No. 3 bougie passed through the first stricture, but was stopped at six and a half inches by a second obstruction, to which the potassa fusa was also daily applied. After the seventh application, a No. 2 elastic gum catheter entered the bladder. In two months the strictures were sufficiently dilated to admit the introduction of a No. 7 steel sound into the bladder. As the man made water very freely, he would not permit my further attendance, but promised to pass for himself a No. 7 bougie once a week, and to let me know if at any time he experienced a return of the difficulty in making water.

CASE III.—*Impassable Stricture, with retention of Urine.*

I was requested to visit Mr. S. B., aged 49. The gentleman had been unable to make water for more than twenty-four hours, and the desire to empty his bladder was so urgent, that he was incessantly straining, but without effect. The patient informed me that he had had a stricture for twenty years, and that his urine had for a long time been passed with great difficulty, accompanied by much straining. On examination, a stricture, impenetrable by the finest-pointed bougie, was found at the bulb, to which the potassa fusa was applied. A full dose of opium was ordered to be taken, and twelve leeches to be applied to the perineum. The patient passed a tolerably tranquil night, and early in the morning the urine flowed in a very small stream. The potassa fusa was used daily from the 1st to the 10th, each application affording marked relief; and on the 11th, a No. 2 silver catheter was passed into the bladder. The stricture was sufficiently dilated by the 20th to admit the introduction of a No. 7 steel sound, when the stream of urine was better than it had been for years. The gentleman, who resided in the country, was obliged to leave town, but promised me that he would

apply to his own surgeon to dilate the stricture further. I heard from him a few months afterwards, when he informed me that he passed his urine in a full stream.

CASE IV.—*Irritable Stricture, with Chronic Enlargement of the Testis.*

J. Collins, aged 30, residing at No. 40, Princes' Street, Soho, admitted a dispensary patient June 19th, 1834. He had for many months experienced great difficulty in passing his urine, which came away by drops and in a very small stream. The right testicle was much enlarged, with a schirrus-like hardness. On examination, a stricture was discovered at six and a half inches, exceedingly irritable, and bleeding from very gentle pressure with the bougie, which did not enter the obstruction. Two grains of calomel, with a grain of opium, were ordered to be taken every night at bedtime; leeches to be applied to the perineum, and a belladonna plaster to the testicle, as the pain in that organ occurred in severe paroxysms. The potassa fusa was applied the following day, and repeated on alternate days, eight applications having been necessary before a No. 2 bougie could be passed into the bladder. The urethra was then left undisturbed for a week, when a No. 3 bougie was readily passed, at

which time the testicle had nearly recovered its healthy state. The size of the bougie was gradually increased to No. 12, and the man was discharged cured on the 7th of October.

CASE V.—*Irritable Stricture.*

Thomas Delaney, aged 28, admitted a dispensary patient, April 28th, 1836, with stricture of the urethra, which he attributed to a former gonorrhœa. He has for a long time passed his water with difficulty, the stream being very small and spiral, and has had several attacks of retention of urine. A No. 2 bougie was, with a little perseverance, passed into the bladder through two strictures, the first at two, and the second at six and a half inches. A week afterwards, the same sized bougie could not be made to enter the first stricture, which was very irritable. The potassa fusa was consequently applied; and after it had been used five times, a No. 4 bougie entered the bladder with facility. Nos. 5 and 6 were introduced at intervals of three days; after which, a mucopurulent discharge came on, which prevented further progress in the case for a month. After the cessation of the discharge, the strictures were gradually dilated so as to admit the introduction of a No. 11 steel sound, when the man discontinued his attendance at the dispensary.

CASE VI.—*Impassable Irritable Stricture.*

H. D., aged 40, a surgeon's instrument maker, admitted a dispensary patient, May 14th, 1835, with stricture of the urethra of twenty years' duration. He has been under treatment several times, and the caustic bougie has been occasionally used. A No. 3 silver catheter is the largest sized instrument he has ever had passed into the bladder, and its introduction was invariably followed by rigors and the loss of several ounces of blood. He has had frequent attacks of retention of urine, and his bladder was punctured in 1825. In 1828, after having suffered from complete retention of urine for three days, during which time no instrument could be passed, the urethra at length gave way behind the stricture, and extensive extravasation of urine occurred, from which attack he very slowly recovered. For two or three years afterwards, abscesses occasionally formed in the perineum. At the period of his application to me, his urine was passed with great difficulty, either by drops or in a very fine thread-like stream, seldom more than a teaspoonful at a time ; and his rest was constantly disturbed by an almost incessant desire to make water. On examination, a stricture, acutely painful on pressure, was discovered at two inches from the

orifice of the urethra, through which no instrument could be passed. At the seat of obstruction, externally, was a tumour of the size of a Spanish nut, and the corpus spongiosum at that part appeared to have been converted into a hard schirrous mass. Leeches were applied to the perineum, a dose of castor oil administered, and the following day the potassa fusa was used. The application of the potassa fusa was repeated every alternate day until the 24th, when a No. 2 elastic gum catheter was passed as far as the membranous portion of the urethra. After two more applications of the potassa fusa to the first obstruction, a No. 4 bougie, armed with the potash, was passed to the second stricture. After three applications to the second stricture, a No. 2 elastic gum catheter entered the bladder, and was retained for about two hours. The strictures were sufficiently dilated by the 5th of July to admit with facility the introduction of a No. 6 elastic gum catheter. As the patient made water in a tolerably good stream, and was disturbed but once during the night, he was so satisfied with his state, that I could not persuade him to allow me to proceed further in dilating his strictures. He promised me, however, to introduce the catheter occasionally, and declared that he had derived more benefit in the short time the potassa fusa had been used, than during the whole of the

extended period when other means had been used. The external hardness had entirely disappeared. The patient again applied to me about five weeks ago, in consequence of a slight return of his former symptoms. He had latterly for many months neglected to pass the catheter, and, on examination, I found the first stricture very irritable, and disposed to bleed on very gentle pressure. The potassa fusa was consequently applied, and repeated at the end of three days, when a No. 3 elastic gum catheter entered the bladder. With the assistance of two more applications of the potassa fusa, a No. 5 elastic gum catheter was passed. Each application of the potash improved the size of the stream of urine. The patient has now promised to continue his attendance until his strictures are properly dilated.

CASE VII.—*Impassable Stricture.*

Thomas Whitehead, aged 35, admitted a dispensary patient, March 10th, 1835, with stricture of the urethra, which he attributed to the use of an injection for the cure of a former gonorrhœa. On his application to me, he had great difficulty in making water, only a few drops passing at a time. He had for many months been obliged to rise very frequently during the night, from the urgent desire to pass his urine. He complained of much pain in the

loins and region of the bladder. On examination, a stricture was discovered apparently at the commencement of the membranous portion of the urethra, which was impassable to the smallest sized bougie. After the application of the potassa fusa, twelve leeches were put on the perineum. The potassa fusa was not again used for a week, until the cessation of a muco-purulent discharge, slightly tinged with blood, which had succeeded its first application. After four applications of the potassa fusa, each of which had improved the stream of urine, a No. 2 bougie was introduced into the bladder, the instrument having been firmly grasped by the stricture. On the 28th, a No. 3 was passed; but the stricture being irritable and disposed to bleed, the potassa fusa was afterwards applied. The urethra was left undisturbed for a week, when a No. 4 bougie was readily passed. By the 16th of July, the stricture was sufficiently dilated to admit with facility the introduction of a No. 8 bougie; after which time the man discontinued his attendance at the dispensary, considering that he made water as well as ever, notwithstanding the necessity of a further dilatation of his strictures was strongly urged upon him.

CASE VIII.—*Inflammatory Spasmodic Stricture.*

Edward Jordan, aged 38, residing at No. 9, Middle-row, Holborn, admitted a dispensary patient June 13th, 1835. He had experienced some little difficulty in making water for two months, but during the last three days before his application to me, his urine had been passed only by drops. As no bougie could be passed beyond six inches, the potassa fusa was applied to the obstruction for two minutes, and immediately after the bougie had been withdrawn, the man made water in a tolerable stream. As it appeared evident that the stricture was in a great degree spasmodic, I then introduced a No. 7 steel sound, about the size of the stream of urine, which readily entered the bladder. No further difficulty occurred; but a slight discharge came on for three or four days, after which the size of the bougies was gradually increased; and on the 18th of July, a full-sized steel sound was easily passed into the bladder.

CASE IX.—*Impassable Stricture from injury to the Urethra.*

Henry Hineks, aged 30, admitted a dispensary patient, Nov. 23rd, 1837, with stricture of the

urethra. He complained of great difficulty in making water, his urine for some time past having been voided by drops, or in a small thread-like stream. The man attributed his disease to a fall from a horse, about four years before his application to me, when he was trampled upon, amongst other places, in the perineum. Immediately after the injury, blood flowed freely from the penis, the patient thinks, to the amount of a quart; and for three or four days afterwards his urine was bloody. After having remained apparently well for two years, whilst leaping a horse without a saddle over a hedge, he was thrown forcibly forwards, and again injured his perineum. Profuse hæmorrhage from the urethra immediately ensued, and the urine continued bloody for a few days afterwards. About twelve months after the last injury, he observed the stream of urine to be smaller, and the time occupied in emptying his bladder to be unusually long. The difficulty in making water gradually increased, and in a few months' time, whilst straining hard to empty his bladder, something appeared to him to give way, when the urine flowed more freely. A purulent discharge from the urethra ensued, to which he has ever since been occasionally subject. The symptoms of stricture have been gradually becoming worse; and, on his application to me, his urine was passed with very great difficulty, there being

seldom more than a teaspoonful or two voided at a time. On examination, an impassable stricture was found at six and a half inches, to which the potassa fusa was applied. The potash was used every alternate day, and after the eighth application a No. 2 silver catheter entered the stricture, but was stopped by a second obstruction an inch beyond the first. The potassa fusa was applied to the last stricture; and three days afterwards, with a little perseverance, a No. 2 silver catheter was passed into the bladder. The stream of urine had been gradually improving during the use of the potassa fusa. No further difficulty in the treatment occurred, and on the 5th of February, 1838, a No. 12 steel sound was readily passed into the bladder. I have since, at distant intervals, passed the same sized instrument for him.

CASE X.—*Impassable Stricture.*

Mr. G. B., aged 65, called upon me on the evening of July 24th, 1837, having been unable to pass any urine for fourteen hours. He had had stricture for thirty years; but during the last ten the difficulty in voiding his urine had considerably increased. The patient said that it sometimes occupied him nearly half an hour to empty his bladder, the urine usually passing by drops, or in a very minute stream, which stopped

frequently whilst making water. On examining the urethra, a stricture was discovered at four and a half inches, which no instrument could be made to enter. After the application of the potassa fusa, a dose of castor oil was ordered to be taken, and twelve leeches to be put on the perineum. A few drops of urine dribbled away during the night, and in the morning about a quarter of a pint was passed without much straining. The potassa fusa was used every day, the urine having been passed better after each application ; and when it had been applied six times, the gentleman assured me that he made water better than he had done for years. After the seventh application of the potassa fusa, a No. 2 bougie was passed through the first stricture, but stopped at a second, two and a half inches further, to which the potash was also applied. After three applications to the second stricture, a No. 2 gum elastic catheter with its stilette was passed into the bladder, but could not be borne more than four or five minutes. The case presented no further difficulty, the strictures having been gradually dilated so as to admit the introduction of a No. 8 bougie by the 15th of September. The gentleman considered my longer attendance unnecessary, as he made water very well ; but promised to pass the bougie for himself occasionally. I saw him a few days ago, when he assured me that he regularly passes for him-

self a No. 8 bougie once a month without any difficulty.

CASE XI.—*Impassable Stricture.*

Thomas Baker, aged 45, admitted a dispensary patient January 18th, 1838. He had experienced more or less difficulty in passing his urine for two years; and latterly it had been chiefly voided by drops. On examining the urethra, the smallest sized bougie could not be passed beyond six and a half inches, and the pressure of the instrument caused free bleeding. The potassa fusa was applied for about two minutes. January 20th; the urine has been passed this morning in a very small stream, with frequent interruptions. The potassa fusa was again used, and its application repeated on the 23rd and 25th. On the 27th a No. 2 silver catheter was passed into the bladder. On the 30th, when endeavouring to introduce a No. 3 catheter, slight bleeding occurred; the instrument was consequently withdrawn, and the potassa fusa applied. After this time no further application of the potassa fusa was required, the stricture having gradually yielded; and on the 8th of March a No. 10 steel sound was readily introduced into the bladder. The man did not afterwards come to the dispensary.

CASE XII.—*Impassable Irritable Stricture.*

Michael Brookery, aged 30, residing No. 4, Lomber-court, admitted a dispensary patient February 2nd, 1839. This man had been subject to stricture of the urethra for nine years. The difficulty in emptying his bladder had latterly considerably increased ; and, on his application to me, his urine was passed only by drops, after much straining. On examination, an impassable stricture was found at six and a half inches, to which the potassa fusa was applied. It was necessary to repeat its application eight times between the 2nd and 28th, before an instrument could be passed through the stricture, when, on the latter day, a No. 2 silver catheter entered the bladder. The stricture yielded but slowly at first, from its extreme irritability, arising most probably from the irregular habits of the patient. The potassa fusa was again used on the 30th, and the urethra left undisturbed for a fortnight. After this time no further application of the potassa fusa was required, and on the 20th of June a No. 12 steel sound was passed without any difficulty.

CASE XIII.—*Impassable Stricture.*

William Cox, aged 52, residing No. 2, Green's-court, Christchurch, admitted a dispensary patient October 15th, 1839. He has had stricture of the urethra fifteen years. The difficulty in making water, from which he has long suffered, has latterly much increased; and during the last year his urine has been constantly dribbling away night and day. On examination, the urethra was observed to be much contracted at its orifice from the cicatrix of a former ulcer, and an impassable stricture was discovered at seven inches, to which the potassa fusa was applied. Its application was repeated on the 17th and 20th. On the 22nd, a No. 2 silver catheter entered the bladder with some little difficulty, the strictured portion of the urethra appearing to be hard and cartilaginous. On the 24th, the man expressed himself as greatly relieved, having been able to retain his urine all night, and had passed it in a tolerable stream during the day. The stricture was sufficiently dilated by the 30th to admit the introduction of a No. 6 steel sound. The man's attendance at the dispensary has since been so irregular, that only the same sized instrument has been passed.

CASE XIV.—*Impassable Stricture.*

John Glover, aged 46, residing No. 20, Great Chapel-street, Soho, admitted a dispensary patient July 19th, 1839, with stricture of the urethra, which he has had for nearly twenty years. He has for the last two years been annoyed by a constant dribbling of urine night and day. On examination, an impervious stricture, which bled on very slight pressure of the bougie, was found at seven inches from the orifice of the urethra. The potassa fusa was used; twelve leeches were ordered to be applied to the perineum, and twelve grains of Dover's powder to be taken every night at bedtime, with an occasional dose of castor oil. After the fifth application of the potassa fusa, a No. 2 silver catheter entered the stricture, but could not be passed onward more than a quarter of an inch. The potassa fusa was used every second or third day until August 15th, when, with some little perseverance, a No. 2 silver catheter was passed into the bladder, the strictured portion of the urethra apparently extending an inch and a half, as it felt rugged and cartilaginous to that extent. Immediately after the catheter had been withdrawn, the man made water in a continued stream, the first time he had done so for many years. Considerable discharge and irritation ensued; and the noc-

turnal dribbling of urine, which had ceased after a few applications of the potash, again returned; but during the day the patient made water in a very small stream. The urethra was left undisturbed for three weeks, when a No. 2 silver catheter was with some little difficulty again passed into the bladder. A muco-purulent discharge ensued, which lasted four or five days, and the stream of urine improved considerably. The following week a No. 4 steel sound was passed. On the 17th of November, after the withdrawal of a No. 5 steel sound which had been introduced into the bladder, a small quantity of blood came away. The urethra was consequently left undisturbed for three weeks; at the expiration of which period, a No. 6 steel sound was passed with facility.

December 30th. The patient now passes his urine in a tolerable stream, and is seldom disturbed during the night. A No. 6 catheter was introduced, with some little difficulty. January 12th, 1840, the No. 6 catheter was passed; but the stricture being irritable and disposed to bleed, the urethra was afterwards left quiet for three weeks. The stricture gradually yielded so as to admit by the end of April the introduction of a No. 11 steel sound. The patient occasionally comes to the dispensary to have the same sized instrument passed for him.

CASE XV. — *Impassable Stricture, with Anasarca and Albuminous Urine.*

Mr. T., aged 34, residing in Grafton-street, Soho, first applied to me Sept. 6, 1839. His legs, thighs, and scrotum, were very greatly distended with serum, and the integuments of the lower part of the abdomen and loins also pitted on pressure. The patient informed me that he had suffered from stricture of the urethra for several years, and that very frequent, persevering, and painful attempts had been made to get an instrument into his bladder, but without success. His urine, which was highly albuminous, had latterly diminished in quantity, and for some length of time past had been voided with great difficulty, generally by drops, after much straining. The patient complained of no pain in his loins, or any other part; the tongue was clean; pulse seventy, without irregularity, the countenance had a slight hectic tint. On examining the urethra, the smallest sized bougie could not be passed beyond seven inches. The potassa fusa was applied, the legs and scrotum were punctured in several places, and diuretics with cathartics prescribed. On the 8th of October, after eight applications of the potassa fusa, a No. 2 silver catheter was, with some difficulty, introduced into the bladder, after

gliding over a rough and gristly surface, apparently occupying the whole of the membranous portion of the urethra. At this time the swelling of the extremities had greatly subsided; the scrotum was nearly reduced to its natural size, and no œdema of the trunk remained. Steel sounds were introduced twice a week, and on the 6th of November a No. 6 was passed without difficulty, and the patient made water in a tolerable stream. The urine had increased in quantity, and contained much less albumen than when first examined. The patient at this time discontinued his attendance, and I saw no more of him until the 8th of July, 1840, when he again applied to me. He informed me that for the last two months his urine had passed less freely, the stream having become gradually smaller. On examination I found it impossible to pass a No. 3 silver catheter, the stricture being very irritable, and bleeding on very slight pressure. I therefore again had recourse to the potassa fusa, and, after four applications of the remedy, succeeded in passing a No. 3 catheter, which was very firmly grasped. In the course of a month I was enabled to pass a No. 7 steel sound. A muco-purulent discharge, however, ensued, and the stricture became too irritable for some time to go on with its dilatation. I have since passed a No. 6 steel sound, but have not yet attempted to introduce one of larger size.

The urine was examined a month ago, and was then free from albumen.

CASE XVI.—*Impassable Stricture, with retention of Urine.*

May 7, 1839, I was requested to visit Mr. C. A., who had been unable to pass more than a teaspoonful or two of urine for thirty-six hours. He had for many years experienced more or less difficulty in making water, which difficulty had latterly considerably increased. He attributed his complaint to a gonorrhœa contracted twenty years ago. He had had several attacks of retention of urine, but none so severe as the present. On examining the urethra, I found an obstruction at six inches, into which neither the smallest sized bougie nor catheter could be made to enter. Five grains of Dover's powder, six of rhubarb, with ten of carbonate of soda, were ordered to be taken every second hour; twelve leeches to be applied to the perineum, and afterwards warm fomentations and poultices. On my visit in the evening, but little improvement had taken place, only three or four teaspoonsful of urine having been passed with urgent straining. A bougie, armed with potassa fusa, was gently pressed against the stricture for about two minutes, and immediately after it had been withdrawn the urine came in a small but continued stream. May 8th, eight

o'clock A.M. My patient had made water two or three times during the night, in a very small stream, with but little straining. The stricture, however, still continued impassable to the smallest sized bougie ; I therefore again applied the potassa fusa. On the ninth the urine came away rather better ; the application of the potassa fusa was repeated. On the 10th, after unsuccessful attempts to get a small bougie or gum catheter into the stricture, I again had recourse to the potassa fusa, when, after a little gentle pressure, the armed bougie passed through the first obstruction, and met with a second, an inch further. The bougie was of course immediately withdrawn, and on the 11th the potassa fusa was applied to the second stricture. The next day a No. 2 elastic gum catheter was passed into the bladder. No further application of the potassa fusa was necessary, the strictures having been gradually dilated so as to admit, by the 6th of September, the introduction of a No. 8 bougie. This gentleman has since called upon me occasionally, when the same sized bougie has been passed with tolerable facility ; but I cannot persuade him to attend regularly enough to have his strictures further dilated.

CASE XVII.—*Irritable Stricture.*

Edward Denyer, aged 26, admitted a dispensary patient October 16th, 1839. He complained much of an aching pain which came on a short time before making water, and subsided immediately afterwards. The stream of urine was at times very small, occasionally divided, and frequently spiral. On examination a stricture was discovered at six and a half inches from the orifice of the urethra. A No. 4 plaster bougie was passed with some little difficulty through the stricture, which was very irritable, bleeding on slight pressure. The same sized bougie was occasionally passed, but at times could not be made to penetrate the stricture. Finding no improvement after a month's trial with the common bougie, with the occasional application of leeches to the perineum, and administration of opium, I applied the potassa fusa three times, and afterwards passed a No. 5 bougie with facility. The stricture was sufficiently dilated by the 9th of January 1840, to admit the introduction of a No. 10 steel sound. This patient had a very small urethra, which would not admit the introduction of a larger sized instrument.

CASE XVIII.—*Irritable Stricture in which the introduction of Instruments caused great Constitutional Disturbance.*

Griffith Ridsdale, aged 47, residing No. 26, Gibraltar Row, West Square, Lambeth, admitted a dispensary patient, October 5th, 1839, with stricture of the urethra of many years' duration. His urine had long been voided with difficulty, frequently stopping suddenly, then passing by drops, and for the last two months it has been constantly dribbling away night and day. He has been under surgical treatment many years, and he informed me that a No. 6 steel sound is the largest sized instrument that has been passed for him, a considerable degree of force having been always required before it could be got through the stricture, which invariably bled freely afterwards. Severe constitutional disturbance always succeeded the introduction of instruments, the patient usually suffering from vomiting and purging for twenty or thirty hours afterwards. On examination, a stricture was discovered at four and a half inches from the orifice of the urethra, which was highly irritable, and bled freely on very slight pressure. A No. 6 bougie, armed with potassa fusa, was applied to the stricture for about two minutes; and was again used on the 10th. On the 26th

a No. 6 bougie was passed into the bladder without any hæmorrhage. 29th. No constitutional disturbance, or other ill effects, succeeded; as formerly, the introduction of the bougie, and the patient says he is better than he has been for many years. Dec. 17th, the patient having been unable to attend since the 29th of October, I attempted to pass a No. 6 bougie, but without success. The potassa fusa was consequently applied, when, after about half a minute's pressure, the armed bougie passed through the stricture, and was of course instantly withdrawn. A No. 6 common bougie was immediately afterwards passed with facility, and retained a quarter of an hour. On the 2nd of January 1840, a No. 9 elastic gum catheter, without its stilette, was readily introduced, and on the 15th a No. 10 bougie was as readily passed.

CASE XIX.—*Impassable Stricture.*

Charles Fox, aged 40, admitted a dispensary patient, June 4th, 1840, with stricture of the urethra. His urine has long been passed with great difficulty, and the stream is very minute and divided. Abscesses have occasionally formed in the perineum, but without leaving fistulous openings. On examination, a stricture was discovered at six inches, which bled from very slight pressure with a No. 2 bougie, which could

not be made to enter the obstruction. After three applications of the potassa fusa, a No. 2 bougie was passed into the bladder without any bleeding. No further application of the potassa fusa was required, and in three months the stricture was sufficiently dilated to admit the introduction of a No. 12 steel sound.

CASE XX.—*Irritable Stricture.*

George Tomkin, admitted a dispensary patient, Feb. 25th, 1840, with stricture of the urethra. His urine is passed with much difficulty, the stream being very small, frequently stopping and coming away by drops. On examination, a stricture was discovered at six inches, through which a No. 2 plaster bougie was passed with some difficulty. The man called at my house late in the evening, having been unable to pass any urine since the introduction of the bougie in the morning. No catheter could be passed, but the point of a No. 2 bougie was, after a little pressure, made to enter the stricture, and, when it was withdrawn, the urine followed in a very small stream. Feb. 27th. As the urine had been dribbling away constantly since his last visit, the potassa fusa was applied to the stricture, and, immediately after the bougie had been withdrawn, the man made water more freely than he had done for a month previously. Leeches were

applied to the perineum, and the bowels well opened; after which the patient was ordered to take five grains of Dover's powder and ten of carbonate of soda three times a day. The potassa fusa was again applied on the 29th of February and on the 3rd of March. March 5th. The stream of urine has much improved since the application of the potassa fusa. A No. 4 bougie was passed into the bladder. The stricture gradually yielded without any further application of the potash, so as to admit, on the 9th of June, the introduction of a No. 8 steel sound, at which time the patient was obliged to go into the country. He has, however, since returned to the dispensary, and I have again had recourse to the potassa fusa with great advantage.

CASE XXI.—*Impassable Stricture.*

John Williams, aged 36, residing at No. 16, Archer Street, admitted a dispensary patient, March 24th, 1840, with stricture of the urethra. This man has had an occasional gleet discharge, with difficulty in passing his urine, for the last two years. On examination, an impassable stricture was found at six inches and a half. After three applications of the potassa fusa, a No. 2 silver catheter was passed into the bladder. The stricture gradually yielded with-

out any further use of the potash, and was sufficiently dilated by the 29th of August to admit the introduction of a No. 12 steel sound.

CASE XXII.—*Impassable Stricture.*

John Peach, aged 52, admitted a dispensary patient, June 18th, 1840, with stricture of the urethra, which he had had sixteen years. He has long had considerable difficulty in making water, with an occasional muco-purulent discharge from the urethra. Twelve years ago a urinary abscess formed, which left for some little time a fistulous opening in the perineum. Between seven and eight years ago a very small silver catheter was with difficulty got into the bladder, since which time no instrument has been passed through the stricture, although a great many attempts with bougies and catheters have been made. The urine is at present passed chiefly by drops, and the man is sometimes half an hour at a time endeavouring to empty his bladder. A stricture, which bled freely on slight pressure, was discovered at five inches and a half, which was impassable to the smallest sized instrument. The potassa fusa was applied three times, after which a No. 2 silver catheter was passed into the bladder. By July 10th the stricture admitted the introduction of a No. 5, but bled a little afterwards, and was rather irritable;

it was consequently touched with the potassa fusa. The stricture became less irritable after the application of the potash, and by September 20th was sufficiently dilated to admit the introduction of a No. 12 steel sound.

CASE XXIV.—*Impassable Stricture.*

John Healy, aged 30, admitted a dispensary patient, June 25th, 1840, with stricture of the urethra. His urine is passed with great difficulty, either by drops or in a very fine stream, and the man is obliged to rise during the night to make water. On examining the urethra, an impassable stricture, which bled freely on slight pressure, was discovered at five inches and a half. After three applications of the potassa fusa, a No. 2 silver catheter was passed into the bladder. No return of bleeding from the pressure of the bougie occurred after the first application of the potash. The stricture gradually yielded so as to admit, by the 20th of September, the introduction of a No. 11 steel sound. During the process of dilatation, in consequence of occasional irritability, the stricture was touched two or three times with the potassa fusa.

CASE XXV.—*Irritable Stricture.*

Eugene Connor, aged 31, residing at No. 11, St. Ann's Court, admitted a dispensary patient,

June 3rd, 1840, with stricture of the urethra. This man has been many years affected with stricture, and has latterly passed his urine with great difficulty. After considerable perseverance I succeeded in getting a No. 2 silver catheter into the bladder. The stricture, which was at the posterior part of the bulb, felt hard and rugged, and bled rather freely. June 28th, a No. 3 catheter was passed with difficulty, being very firmly grasped, and when withdrawn was followed by a little blood. July 2nd, the No. 3 catheter could not be made to enter the stricture, the potassa fusa was therefore applied, and was again repeated at the end of three days. After this time there was no further difficulty experienced in the dilatation of the stricture, which, on the 10th of August, admitted the introduction of a No. 10 steel sound. The man's attendance at the dispensary has since been so irregular, that no attempt has been made to increase the size of the instrument.

CASE XXVI.—*Impassable Stricture.*

John Sanderson, aged 43, admitted a dispensary patient, November 20th, 1839, with stricture of the urethra, accompanied by a slight gleet discharge. The urine was passed with great difficulty, the stream being very small and divided. On examination, an impassable stric-

ture was discovered at seven inches, which bled on slight pressure from the bougie. After four applications of the potassa fusa, a No. 2 silver catheter was passed into the bladder. No further application of the potassa was required, and by February 11th, 1840, the stricture was sufficiently dilated to admit the introduction of a No. 12 steel sound.

CASE XXVII.—*Impassable Irritable Stricture.*

Robert Taylor, aged 32, admitted a dispensary patient April 16th, 1840. This patient first observed a difficulty in passing his urine twelve months ago, which difficulty has gradually increased to the present time, and the water is now voided only by drops, with great pain. Before his application at the dispensary, he applied to a surgeon, in consequence of retention of urine. An unsuccessful attempt was made to pass a catheter, which could not be made to enter the stricture. According to his account he lost a considerable quantity of blood, which, with the medicines that were given to him, afforded slight relief, the urine passing again by drops as before. A second attempt was made to pass a catheter, which was also unsuccessful, and caused a greater loss of blood than the first. He then came to the dispensary ; and, on examination, an impassable stricture was found at five inches and

a half, which bled from very slight pressure. The potassa fusa was applied to the stricture; leeches were directed to be put on the perineum, which was afterwards to be well fomented. The bowels were freely opened, and, afterwards, five grains of Dover's powder and ten of carbonate of soda were ordered to be taken three times a day. It required sixteen applications of the potassa fusa before any instrument could be passed, when, with some difficulty, a No. 2 silver catheter was got into the bladder. The stricture was long and very hard, feeling like cartilage, and the catheter was firmly grasped.

In this case, as in many others, I regretted exceedingly that the patient's necessary avocations would not permit me to leave the instrument in his bladder. This stricture has been so irritable and unyielding, that with great difficulty it was sufficiently dilated by the 16th of July to admit the introduction of a No. 6 steel sound, and it has been necessary to have recourse to the potassa fusa occasionally, which has invariably afforded great relief. I have not yet been able to get beyond a No. 6; for whenever an attempt has been made to pass a No. 7, so much local irritation, accompanied by severe rigors, ensued, that matters were rendered worse for a time. The patient now passes his water in a very good stream, but cannot bear the introduction of a larger sized instrument than No. 6.

This is a case in which the retention of a catheter in the bladder would in all probability be attended with the very best effects; but such a practice cannot be pursued, as the patient is obliged to earn his living, and has to stand the greater part of the day.

CASE XXVIII.—*Impassable Stricture, with
Fistulæ in Perineo.*

Charles Rowley, aged 42, residing in Monmouth Street, admitted a dispensary patient December 14th, 1839, with stricture of the urethra, and three perineal fistulæ, through which the greater part of the urine is passed. About six years ago he first observed some difficulty in making water, which, from that time, so much increased, that in five months afterwards the man was admitted into St. Bartholomew's Hospital with retention of urine, which was succeeded by rupture of the urethra. Free incisions were made, and he was enabled in three months to leave the hospital. For two years after the rupture of the urethra, the man was able to pass his water in a very small stream; but was obliged, some time afterwards, to return to the hospital, with retention of urine and a swelling in the perineum. A free incision was made, and the urine escaped through the opening. Since the last incision, the greater part of

the urine has come away from fistulous openings in the perineum, and is at present passed in very small streams, chiefly by the fistulæ, and partly by the orifice of the urethra. A great number of unsuccessful attempts have been made to get an instrument into the bladder. On examination, the smallest sized bougie was stopped at six inches, and could not be made to enter the obstruction. The bowels were freely opened, and leeches applied to the perineum; after which five grains of Dover's powder, with ten of carbonate of soda, were ordered to be taken every four hours. Severe rigors occurred after the examination of the urethra, which the patient informs me has been the case for some time past, whenever attempts have been made to pass an instrument. The potassa fusa was applied to the stricture, and its application repeated on the 21st, the 24th, and 26th. The report on the last day states that the urine passed in an improved stream by its natural channel. The potassa fusa was repeated on the 28th and 31st. On the 2nd of January, 1840, a No. 2 silver catheter was passed into the bladder with some little difficulty, and when it was withdrawn, about a teaspoonful of blood escaped. The man's avocations would not permit me to leave the catheter in the bladder. January 5th, a No. 3 silver catheter was passed, and on the 8th a No. 4 was introduced after considerable perseverance, the instru-

ment having been very firmly grasped by the stricture. February 11th. The stricture still admits, with difficulty, the No. 4 silver catheter; but the stream of urine has much improved, and the fistulæ are nearly closed. In consequence of the irritability of the stricture, and the frequent occurrence of rigors after the introduction of instruments, the potassa fusa was again applied. February 13th. No rigors occurred from the application of the potassa fusa, which was repeated this day, and also on the 16th and 20th. On the 24th, a No. 4 plaster bougie was passed without difficulty into the bladder. March 5th. No irritation succeeded the last introduction of the bougie; but on attempting to introduce a No. 5 this day, the instrument was so firmly grasped by the stricture, that it could not be passed on into the bladder. As the strictured portion of the urethra felt hard and rugged to some extent, the potassa fusa was applied. March 7th. A No. 5 bougie was passed to-day; and on the 18th the same sized silver catheter was introduced. The stream of urine has greatly improved, and the patient is obliged to rise during the night to make water, which he did not do formerly, as the greater part of the urine dribbled away by the fistulous orifices. A considerable muco-purulent discharge occurring at this time, the urethra was left undisturbed until June 6th, when a No. 6 steel sound was passed into the

bladder. From this time no further difficulty occurred, the stricture gradually yielding so as to admit, by August 15th, the introduction of a No 11 steel sound. A probe moistened with water, and covered with powdered nitrate of silver, has been introduced two or three times into one of the fistulæ which did not seem disposed to close. The fistulous openings are now all closed, and the patient comes to the dispensary occasionally to have a bougie passed.

END OF PART I.

STRICTURE OF THE URETHRA.

PART II.

STRICTURE OF THE URETHRA.

CHAPTER I.

FURTHER OBSERVATIONS ON THE EMPLOYMENT OF THE POTASSA FUSA IN STRICTURES OF THE URETHRA.

THE objections to the employment of caustic in the treatment of strictures of the urethra which are so commonly entertained in the present day may surely with equal propriety, be applied to almost every powerful remedy used for the relief of human suffering. All the arguments brought forward in books, or, otherwise, for the entire abandonment of such powerful agents as the nitrate of silver and caustic potash in the removal of obstructions of the urethra are, to my mind, of very slight import, as, when strictly examined, they will be found to apply solely to the abuse of these remedies. Believing, as I do, from extensive

observation of the effects of the *argentum nitratum* and *potassa fusa*, that both of them, more particularly the latter, are agents of such great use in bad cases of stricture, that to discard them because they have often been abused would be on my part extreme folly. Of all modern authors, Mr. Guthrie appears to have the most favourable opinion of the employment of caustic in strictures of the urethra, the *argentum nitratum* being that which he generally uses. It appears that he now, however, employs it merely for the relief of irritation, and not for the removal of the obstruction. Mr. Guthrie seldom has recourse to the *potassa fusa* in stricture, having a preference for the *argentum nitratum*, but, with his usual candour, admits that the former, when used in small quantity, is safer than the latter. From the whole tenor of this author's observations it is evident that he thinks highly of the remedial powers of caustic in stricture, although, in compliance with prevailing prejudice, he seems to be a little coy in expressing the full extent of his affection. My preference for the *potassa fusa* in the treatment of urethral obstructions has arisen from a well-founded conviction of its superiority, both in safety as well as efficacy, to the *argentum nitratum* when employed for the removal of the thickened tissues of a permanent stricture. I believe also, that the former will, in most cases, prove quite as effectual as the latter in the relief of spasm or irritation.

In these additional observations regarding the potassa fusa, my principal object is to induce others to avail themselves of a truly valuable remedial agent, in a disease which, when neglected, too often proves not only a source of very great suffering to the patient, but also of difficulty, as well as anxiety, to the surgeon, I employ the potassa fusa for two very different purposes, the one being merely for the relief of spasm and irritation; the other for the removal of the stricture itself. In the fulfilment of the first intention. I am quite willing to admit that the nitrate of silver, when in good hands, may prove as efficacious as the potash. I generally, however, use the latter for the relief of irritation instead of the nitrate, because, as was observed by Mr. Abernethy, when speaking of the employment of the two caustics in stricture, "I think the kali a safer thing to use." It is evident that the potassa fusa, as employed by Mr. Whately, in the very minute quantities which he used, could only have had the effect of relieving irritation. It seems that Mr. Whately had no confidence in the use of the caustic potash in impassable strictures, as he recommended that in all cases where a bougie could not be got into the obstruction, the lunar caustic should be applied. If I had found the good effects of the potassa fusa in stricture limited to the mere relief of irritation and spasm, the profession would

never have been troubled with any observations of mine upon the subject.

It appears to me that the great value of the caustic potash in stricture consists in its powerful solvent effect upon the tissues forming the obstruction. Of its great superiority in this respect to the nitrate of silver, I am daily more and more convinced. In many cases of impassable stricture, by a judicious application of the potassa fusa, the surgeon will be enabled in a few days, or weeks at furthest, to get an instrument safely into the bladder. Indeed, I think that such will be the result in most cases; for at present, as well as formerly, my experience leads me to conclude that the exceptions will be few.

To bring the subject fairly before the reader, let us suppose that we have presented to us for treatment a bad case of stricture pervious to the urine, into which, however, no instrument can be made to enter without the employment of so much force as might lacerate the urethra. In such a case what is the best practice to be pursued? "That is the question." Shall we adopt Dupuytren's favourite mode of proceeding which he called vital dilatation? Shall we endeavour to overcome the obstruction by making steady pressure against it for several minutes with a small metallic sound, and repeat the operation as often as prudent, with the hope of thus eventually getting an instrument

into the bladder? Or, shall we have recourse to the application of caustic? I think it may be assumed that division of the stricture either by the lancetted catheter, or by an incision in the perineum, will be justifiable only after the failure of less severe measures, except, indeed, in extremely urgent cases.

With regard to the propriety of adopting the first plan, that of Dupuytren, my observations will be seen under the head of "Dilatation of Strictures by Retention of the Catheter." The second plan, will, I know, occasionally succeed, but it requires for its success great tact, a light and steady hand, with a thorough knowledge of the road to the bladder, in all its various diseased obstructions and deviations. The instrument usually employed, indeed, the only effective one for the penetration of an old hard stricture is a metallic sound, well rounded at its point, not smaller than No. 2, nor larger than No. 4; but the less the size, the greater will be the chance of its causing mischief. I can readily believe that such first-rate surgeons as Sir B. Brodie and Mr. Guthrie, with some few others, may, by perseverance, eventually succeed in getting an instrument through what often proves to be a rugged and intricate passage to the bladder. Such men as these may doubtless frequently accomplish this desirable object, without either lacerating the urethra or making false passages in it; yet, I cannot

but think that the accidents just mentioned, will be very likely to happen in the hands of surgeons of less skill and experience. Sir B. Brodie, in his usual clear and graphic style, has given us most excellent rules for the employment of the sound in impassable strictures—a style, by-the-bye, worthy of all imitation, in which, as in a mirror, nature becomes truthfully reflected in all the lights and shades of disease. Notwithstanding, however, the excellence of the rules given us for the management of the sound in impassable strictures, it will be found in practice that it is no easy matter to follow them: to know, in fact, what is the exact degree of force that can be employed with safety. It has been truly said, “that it is hard to stop at the precise point where the shade of a vice steals upon the brilliancy of a virtue.” It is equally difficult, when endeavouring to pass a small metallic sound through an impassable stricture, to stop at the precise limits, which, if exceeded, that which was only a proper degree of force, may become injurious violence. To use such an instrument with safety to the patient in an imperious stricture will often tax to the utmost the skill, even of such a master of his art as Sir B. Brodie. The latter plan, the potassa fusa being the caustic employed, is the one which I commonly adopt in impassable stricture, from a conviction that it is, at all events, the safest, if not, as I fully believe it to be, the most effectual for

the relief of the patient in the majority of such cases. It must be recollected that the nitrate of silver, to be effective in old impervious strictures, must be used so as to cause a slough, the ill effects of which have been stated in a former part of this work.

It is still my conviction, that the potassa fusa, used in the manner I have recommended, is not only more efficient, but far less hazardous when employed for the cure of obstructions of the urethra, than the argentum nitratum, which obtained so much celebrity in similar cases from the practice of Sir E. Home.

An attempt to explain the mode of action of the potassa fusa will be found in a former part of this work. Since that time I can truly say, that more extensive opportunities in its employment, have strengthened my confidence in this remedy. It may be asked how it is, that others have not been equally successful as myself in the treatment of strictures with caustic. The principal reason of their failure, is, I believe, that the nitrate of silver has been the preparation usually employed by surgeons. But even supposing the caustic potash to have been the agent used; do we not constantly find in practice, that a particular remedy proves more successful with one person than another? To use the potassa fusa successfully in bad cases of stricture, often requires a considerable degree of confidence, derived from long experience in the

good it is able to effect. It is, in fact, this faith and knowledge, that will lead one person to persevere in the use of the potash long after another would probably have thrown aside, from a feeling of disappointment, this truly valuable remedy. The treatment of an impassable stricture by the potassa fusa, will for some little time require much care on the part of the surgeon, as there are two things which he must more especially endeavour to avoid, viz., causing retention of urine, and a false passage. The former will not be very likely to occur, if the potassa fusa be applied in very small quantities, and only gentle pressure made with the bougie. If it can be so managed, the potassa fusa should be used at night, that the patient may remain quiet for some hours afterwards, and it will be best for him to pass his urine just before its application. With these precautions, the application of the caustic potash will usually diminish instead of augment the disposition to retention of urine; it has, indeed, generally a marked effect in relieving irritation, by removing in some degree the morbid sensibility of the stricture. To guard against making a false passage, if the armed bougie, when gently pressed against the stricture, should advance without being grasped, it should instantly be withdrawn, and before the next application of the potash it will be best to take an impression of the obstruction, by the model bougie; indeed this should be done at the commencement of the

treatment, especially in cases where instruments have been frequently passed. When the armed bougie has fairly entered the obstruction, it should be gently pressed forward for a minute or two, so as to allow the kali to dissolve. In old cases, where the stricture is hard and gristly, subsequent experience has convinced me, that a more free application of the potassa fusa can be advantageously made than in my former observations, I ventured to recommend. I should, however, advise surgeons not very familiar with the management of bad cases of stricture, to restrict themselves to the quantity before recommended by me.

When using the armed bougie, it should be recollected, that the channel through which the urine passes in these cases, is often irregular, and that the greatest care should therefore be taken to withdraw the instrument when not grasped; or, even then, if it be found to deviate beyond a slight degree from the natural course of the urethra, for it should never be forgotten, that there are instances in which the bougie may be very firmly grasped whilst in a false passage.

In the application of the potassa fusa to old gristly strictures, a slight mucous discharge, with but little, or often no admixture of blood, is all the inconvenience that usually follows; for as to pain, there is scarcely any. It will sometimes, however, happen, that a patient experiences rather a sharp scalding pain when first passing his

water after the introduction of the armed bougie; to avoid which, in future, the operation, as previously recommended, should be had recourse to at bedtime, taking care that the patient passes his water just before. By this means, so long a time usually elapses before the urine is passed, that scarcely any pain will then be felt. There are occasionally strictures so irritable, that when but gently pressed against with a bougie, more or less pain is experienced. In these cases, two or three applications of the potassa fusa usually remove the irritability. I may here repeat, that no hæmorrhage of any consequence need ever be feared when the kali is properly used. In no instance has this ever occurred in my practice, nor has anything like a slough been caused in the great number of cases in which I have applied the remedy. After a stricture has become pervious to the bougie, instead of proceeding as formerly to introduce one a size larger than the obstruction, which could then only be penetrated by the point of the instrument, I now use rather a smaller armed bougie, which enables me to apply the potassa fusa to the whole length of the disease. I have generally found the action of the caustic potash most efficient, when the armed bougie has been passed slowly backwards and forwards over the strictured portion of the urethra, the good effects of which will be seen in the perusal of some of my cases. In the treat-

ment of old hard impervious strictures, with the potassa fusa, it must not be expected that they are to disappear like magic by a few applications of the remedy. Such good fortune will seldom be obtained should the stricture involve more than a slight portion of the canal. The surgeon should, indeed, expect in many of these cases, to find the road he has to travel so rugged and intricate, that his progress to be safe must necessarily be also slow. If after each application of the potassa fusa, the bougie should be found to advance, however slightly, there will be good reason to expect that by a steady perseverance in the treatment, success will eventually be obtained, and this often in cases which appeared to be most unpromising.

It may now fairly be asked, what has been gained after all this trouble and perseverance, which could not, very probably, have been accomplished in much less time by division of the stricture with a lancetted catheter, or by perineal incision? To which, it may be answered, that the patient has, at all events, escaped an operation not always free from hazard, especially if the lancetted catheter be used, even if the dread usually entertained of such proceedings be accounted as nothing; and should the potassa fusa eventually fail in clearing the way to the bladder, division of the stricture can then be practised. Of course, in all cases of impassable stricture, it is possible that

continued retention of urine may render imperative an immediate operation for its relief.

I believe, also, that in these cases, by the potassa fusa treatment, the relief afforded will generally be more permanent than when incision of the stricture has been practised, to say nothing of the pain and irritation caused by retention of the catheter in the bladder, often indispensable in the latter method of proceeding. After having succeeded by the application of the potassa fusa, in getting an instrument into the bladder, the remaining dilatation of the stricture can often be readily effected by the common bougie or sound. Should the obstruction, however, yield very slowly, much good will often be done by the occasional use of the kali.

In old hard strictures, the sound, when it can be borne without irritation, is undoubtedly by far the best dilating instrument. There are, however, some cases in which metallic instruments produce a considerable degree of irritation, when plaister bougies have no such effect. There are also instances where the strictured portion of the urethra is long and irregular, in which, although a plaister bougie can be passed into the bladder, a metallic sound cannot; at least I have failed with the latter instrument occasionally in such cases.

Where a considerable portion of the urethra is much thickened and of a gristly hardness, it must not be expected that the whole of the diseased

tissue can be safely removed by the caustic. I have generally found, however, that after a free passage for the urine has been obtained by dilatation of the urethra to nearly its healthy size, the greater portion of the thickened tissue will gradually disappear; and if the patient should prudently follow the direction of his surgeon in continuing regularly the use of the bougie or sound, the remaining part of the disease, with a very few exceptions, will eventually lose much of its disposition to contraction.

There are old strictures of small extent, varying from a slight annular obstruction to one of an inch or rather more in extent. There are others, where the mischief is comparatively recent, but which often prove very troublesome from their extreme irritability. Such strictures, I have good reason to believe, will be less likely to return when treated by the potassa fusa than when dilated with the bougie only, as the potash seems more effectually than the latter to remove the diseased tissue.

The various kinds of strictures and the circumstances in which the potassa fusa has proved most useful have, however, been fully described in the earlier part of my observations, which subsequent experience has only confirmed. Although it was my impression when first publishing on this subject, that strictures treated by the regular application of the potassa fusa until the accomplishment

of their full dilatation, were less likely to return than if treated simply by the bongie, I preferred waiting till further experience should have confirmed that impression before confidently stating such an opinion. It will doubtless be thought by many persons that my account of the effects of the potassa fusa in stricture is much too favourable. Nothing can, however, be further from my intention than to mislead others by an overstatement of its powers in that disease. All I can say is, that it has less frequently disappointed me than most remedies. It is not, and never has been, my intention to speak of the caustic potash as a specific in all cases of stricture. I am daily more and more convinced, however, that it is an agent of too much value in the management of many cases of stricture to be lightly laid upon the shelf; also, that the surgeon who gives it a proper trial will very often be extremely gratified, and perhaps surprised at its good effects. The fact is, that all the mischievous consequences caused by the nitrate of silver when used for the destruction of strictures, have equally, and it appears to me most unjustly, been attributed to the caustic potash; such as inflammation, more or less severe, often involving the prostate and bladder, abscesses, fistulous openings, false passages, and profuse hæmorrhage. How far in the hands of others the potassa fusa may have produced similar accidents, it is of course impossible for me to say;

but in mine, its action has generally been of a mild character; and having now used the remedy many hundreds of times, I am perhaps entitled to speak with some degree of confidence upon the subject. All the ill effects which have occurred to me from the application of the caustic potash in stricture shall now be unreservedly stated; nothing shall be intentionally concealed. Let then the potassa fusa be arraigned and tried upon the several indictments brought against the argentum nitratum in the treatment of stricture.

To the first charge, that of having caused inflammation of the prostate and bladder the answer is,—not guilty. To the second, that of having caused abscesses, the answer must be,—guilty, on one occasion only. This was the case of a dispensary patient of strumous habit, who had a hard irritable stricture at three inches and a half from the orifice, and another at the bulb. At the commencement of the treatment with the potassa fusa, there was a considerable degree of hardness in the perineum. During the dilatation of these strictures, to which the caustic had been occasionally applied, an abscess formed in the perineum, which was opened; it very soon healed, and did not appear to have any communication with the urethra. This man suffered much from hæmorrhoidal tumors; and a few months after the formation of the first abscess, another formed, which communicated with the rectum. This was

laid open with the bistoury. He has long been well, but by my advice occasionally passes for himself a full-sized bougie.

To the third charge, that of the production of fistulous openings and false passages, I must give rather a qualified answer, which is,—not guilty, to my knowledge. Honesty compels me to give a less positive acquittal in this instance; for it is possible that on one or two occasions I may have made a false passage without being at the time aware of the circumstance. I have purposely related one case of impassable stricture treated by the potassa fusa, where there was a false passage when the patient first came under my care; and notwithstanding all my precaution, the armed bougie would occasionally take the wrong direction, but was of course quickly withdrawn, without having apparently done any harm. Let me, however, repeat, that very great care should always be taken when using the potassa fusa, especially in long irregular strictures, as, of course, unless employed with proper caution, holes may be burned in the urethra with this caustic as well as with the argentum nitratum.

To the last charge, that of having caused profuse hæmorrhage, I answer, without the slightest hesitation,—not guilty. Let it be remembered, however, that the above favourable account applies only to careful application of the caustic potash, which it has been my constant endeavour to en-

force, very often in this respect laying myself open to the charge of tautology, considering the importance of the subject a sufficient justification for such repetition.

I have at this time under my care, a case in which there has long been a false passage, into which for some years instruments have been passed, in the supposition of their having been in the right direction. I was at first deceived in a similar manner, as the catheter was grasped firmly whilst in the false passage, communicating precisely the same sensation as when the instrument is passed through a hard stricture; and it was only on finding it proceed as far as the bladder, that I became fully aware of the existence of a false passage. In this case, whatever may be the instrument used, it is very difficult to avoid the false passage; every thing being sure to take that course unless great precaution be used. If the *potassa fusa* be used in such a case as this, it will be best to apply it in a silver canula containing a stilette, at the end of which is attached a small cup for the caustic which is concealed within the canula until the instrument arrive at the stricture, when the stilette must be pressed forwards. Should the obstruction be beyond the straight part of the urethra, a curved canula must of course be used.

Old, hard, narrow strictures, complicated with

one or more false passages, are undoubtedly the most difficult of all to manage ; and in which, occasionally, all milder measures will fail in affording relief, so that it may at last be necessary to resort to division of the obstruction.

Having been by far the greater part of my professional life attached to an extensive public institution where stricture cases are of frequent occurrence, I have had ample opportunities of witnessing the effects of different kinds of treatment in that disease. The result of my experience is, that more may be done in bad cases of stricture with the least chance of injury, by a judicious employment of the potassa fusa than by any other means. Prejudice is, however, all powerful. I have often seen surgeons of high character, whose objections to the employment of caustic in any form or quantity, were insurmountable, yet who did not hesitate to force a steel sound into the bladder at the cost of no slight degree of bleeding. Surely there was a little inconsistency in those who were so prejudiced against the use of caustic in any form, thus disregarding the laceration and subsequent inflammation of the urethra caused by their own practice. It must, however, be admitted, to borrow a military phrase, that there is more *eclat* to be obtained by forcibly entering the bladder by storm than by the more slow but often safer process of the mine.

It has indeed occurred to me to witness so many ill effects from the employment of what has appeared at the time a necessary degree of force in the dilatation of unyielding strictures, that I gladly have recourse to the potassa fusa in such cases. The greater number of strictures will no doubt yield gradually to the ordinary method of dilatation, and I do not, perhaps, upon an average, have recourse to the potash in one case out of thirty.

The particular kinds of stricture in which the remedy has proved most useful, will be found described in the first part of these observations. I may here remark, that patients usually find so little inconvenience, and so much advantage from the use of the caustic potash, that they are generally anxious for its repetition before sufficient time has elapsed for its safe re-application.

I have scarcely any thing to add in explanation of the action of this remedy, but it may be as well to repeat, that instead of causing, like the nitrate of silver, destruction of the stricture by a succession of sloughs, it seems to act principally by gradually abrading and dissolving the diseased tissue, which comes away in the form of a slimy discharge, often with a more or less admixture of blood.

Having now, to the best of my knowledge, given an accurate account of the effects of the potassa fusa as employed by me for nearly twenty years

in the treatment of stricture, I cannot but hope that my success may be the means of inducing others to avail themselves of the powers of this truly valuable remedy, and that I shall thus have contributed, in some slight degree, to the alleviation of human suffering.

CHAPTER II.

ON THE TREATMENT OF STRICTURES BY RETENTION
OF THE CATHETER OR BOUGIE.

THIS method of cure was much practised as well as strongly recommended by the late Baron Dupuytren, and was considered by him to be of two kinds: The first, 'or vital dilatation,' he practised in every case in which no instrument could be made by a moderate and safe degree of force to enter the stricture, except in an emergency where, from continued retention of urine, a few hours' delay might prove fatal. The instrument preferred by the Baron for this dilatation, was a gum-elastic bougie of medium size, of sufficient length to reach the obstruction, and to project about an inch from the orifice of the urethra. The bougie having been introduced, was fixed in the urethra by the usual means, so as to keep up a gentle pressure against the face of the stricture, the dilatation being facilitated, it was supposed,

by turning the instrument from time to time in the canal. Dupuytren states in his *Léçons Orales*, that, often in a few hours, and in less fortunate cases, in a few days, by this method, the obstruction of the urethra will be overcome without difficulty, laceration, or discharge of blood. The action of the bougie used in this manner was considered by the Baron to be of two kinds, its first effect being the removal of spasm, for, however firmly the instrument may be grasped on its introduction, in a short time it will admit of being freely moved in the urethra. Secondly, after retention of the bougie for a few hours in the urethra, a more or less abundant discharge of mucus, or muco-purulent matter occurs. Under the influence of these two phenomena, the removal of spasm and free urethral discharge, the stricture becomes dilated, in some cases quickly, in others more slowly. The dilating power of a bougie when retained against the face of a stricture, was accidentally discovered by Dupuytren in the case of a gentleman of extremely nervous temperament, who was suffering from retention of urine, caused by an impassable obstruction. This gentleman was so alarmed at the idea of the introduction of an instrument into the urethra, that it required much persuasion to induce him to submit to the operation. Dupuytren having at length succeeded in introducing a small bougie as far as the stricture, but without being able to get the

point of the instrument into the obstruction, and wishing to make a further trial in the course of a few hours, determined to fix it in its position, fearing that if withdrawn, the patient might not submit to its re-introduction.

On his return in a few hours' time, he found that the gentleman had passed some urine by the side of the bougie, which could now be readily engaged in the stricture. The bougie gradually advanced, and at the end of twenty-four hours, was passed into the bladder. Complete dilatation of the obstruction was effected by the retention of catheters, their size having been gradually increased. The value of the discovery was fully appreciated by this sagacious surgeon, and the method of relief thus accidentally made known, and afterwards successfully adopted by him in most cases of impassable stricture.

In cases where the point of the bougie could be made to enter a stricture, so as to be engaged in its grasp, Dupuytren fixed and retained it in that position, the bougie usually employed being a gum-elastic one, gradually tapering towards its point. The instrument thus fixed within the obstruction, sooner or later caused its dilatation, and in some instances had also the effect of dispersing the thickened tissues. A sufficient length of the bougie was left projecting, to admit of its being gradually advanced by the hand of the patient or surgeon, as the dilatation proceeded. The bougie

was retained in the urethra until it could be made to enter the bladder, when it was changed for a gum elastic catheter, complete dilatation being effected by the latter. This was called by Dupuytren, "mechanical dilatation," and he compared the operation of the bougie to that of a wedge. The urethra, however, being a living part, the action of the bougie, although perhaps, principally mechanical, must have been partly vital.

Dupuytren gladly availed himself of his discovery of vital dilatation in the treatment of impassable strictures, and ceased to employ force to overcome them by the method previously adopted by Dessault at the Hôtel Dieu.

Dupuytren strongly condemns the employment of force, and states that in ten individuals in whom that practice was adopted, half of them experienced lacerations of the urethra, swellings of the penis, and infiltrations of urine, the result having been occasionally fatal. His concluding observations on dilatations of the urethra cannot be too forcibly impressed on the mind of every surgeon who follows the practice recommended. The amount of these observations is, that whenever an instrument of the smallest calibre can be passed through a stricture, it will be possible in ten or twelve days to dilate the canal to its full size, yet, such rapid dilatation is never desirable, as it is often followed by very severe consequences. He observes, that the tissues forming strictures

possess an extensibility the bounds of which can scarcely be passed without causing laceration, and often destructive inflammation. The dilatation should, therefore, be very slowly effected.

In the greater number of Dupuytren's cases, the dilatation was only temporary, the strictures having a tendency to return. He consequently strongly enforces the necessity of the use of bougies for some length of time, gradually extending the interval of their introduction. The practice of vital dilatation, by fixing a round-pointed hollow elastic gum bougie of medium size against an impassable stricture, has also been strongly recommended by Mr. Guthrie, and was successfully adopted by him in several instances before he knew that Dupuytren had long been pursuing a similar plan of treatment. Mr. Guthrie observes, that "the continued presence of a bougie against a stricture, instead of increasing irritation, has the directly contrary effect; and that after it has been retained a few hours, if a patient becomes sensible of any difference, it is that his water passes more freely than before." Mr. Guthrie inculcates the necessity of effecting the dilatation slowly, observing, that "the greatest evil arises from increasing the size of the bougie too rapidly." He also enforces the necessity of continuing for a long time the introduction of the bougie.

The dilatation of strictures by retention of the catheter is much practised by French surgeons,

but has never been a favourite method of proceeding with English practitioners. The truth is, that in France this mode of treatment does not appear to cause so much irritation as in our own country. There must surely be some reason for this. We cannot, indeed, suppose the urethra of a Frenchman to be very different to that of an Englishman, yet the former, it would appear, has commonly less irritability than the latter, especially as regards its tolerance in the retention of instruments. This circumstance may probably be accounted for in some degree by difference of climate and diet, rendering the Englishman more predisposed to inflammation than the Frenchman. Moreover, should inflammation occur in the latter, it is usually of a milder character, and easier controlled than when it attacks the former. We have, indeed, a familiar illustration of this difference in the almost invariably successful treatment of acute pneumonia with emetic tartar in France, whereas in England the same disease, treated by the same remedy, commonly requires, in addition, the abstraction of more or less blood. The pain and irritation, often of a severe character, which so commonly occur in this country during the dilatation of strictures by retention of the catheter, are, indeed, sufficient reasons in themselves for the practice being adopted only under peculiar circumstances, and not as a matter of choice. Another good and sufficient reason, how-

ever, for the non-selection of this method is, that the more quickly the dilatation of a stricture is effected, the greater is its liability to return, a well-known fact illustrative of the old proverb, "the greater haste, the less speed." To these reasons may be added, the necessary confinement of the patient to his room during this process of dilatation, which, although last mentioned, is not, perhaps, the least influential of the causes assigned for the preference of English surgeons to the treatment by the bougie. There are, however, special occasions in which retention of the catheter proves a most valuable auxiliary in the treatment of strictures. Although many of these have been mentioned when describing the treatment of irritable and impassable strictures in a former part of this work, it will, I think, be useful to particularize them more fully in this chapter. The first case in which we may be very glad to avail ourselves of this mode of treatment, will very probably be one of retention of urine, the result of long-continued stricture, in which the patient's sufferings from a distended bladder will, perhaps, be most acute. It may happen that by persevering and gentle attempts we may at length be successful in getting a No. 2 catheter into the bladder, thus, perhaps, relieving the patient from a state of almost indescribable agony. In this instance there can be no doubt of the propriety of retaining the catheter in the bladder,

whether it be one of silver or of elastic gum; but if the latter, so much the better, as it is less likely to cause irritation than the former. The instrument should be plugged up, and the patient can remove the plug whenever he desires to pass his water. Most probably in the course of two or three days, sooner or later, the instrument will be so loose in the urethra, that it may be easily replaced by one of larger size, and perhaps the complete dilatation of the stricture effected by continued retention of the catheter, should no great irritation ensue from its presence. In my own practice, however, if there are no false passages or disposition to rigors, as soon as the obstruction will admit of a No. 7 or 8, I prefer gradually accomplishing the remaining dilatation with the bougie, and perhaps an occasional application of the potassa fusa. The reason for retention of the catheter in this instance is obvious, for should the instrument have been withdrawn soon after evacuation of the bladder, it is possible that the next attempt to introduce it, which would probably soon have been required, might not have been attended with the same success.

Another instance in which the treatment by retention of the catheter will be of great value, and should, if possible, be adopted, is where there is one or more false passage, or perhaps several. It often happens, that in such a case no slight difficulty is experienced in getting an instrument

through the natural channel into the bladder. Here, if once successful in our object, but little further skill will be required if the catheter be retained, and, when loose, replaced by one of larger size, taking care slowly and cautiously to complete the dilatation by the same means. The treatment by retention of the catheter has been strongly recommended by Sir B. Brodie, in cases of highly irritable strictures, in which rigors, commonly succeeded by considerable constitutional disturbance, are of frequent occurrence after the introduction of instruments, and in which often but little progress can be made with the bougie. Sir B. Brodie was led to the adoption and recommendation of this plan on discovering the cause of these rigors to be the passage of the urine over the strictured portion of the mucous membrane rendered more irritable by the bougie. The management of such cases by retention of the catheter, is, without doubt, the best that can be pursued, should the circumstances of the patient admit of its adoption. In many similar cases, however, occurring in dispensary patients, with probably a family dependent upon their exertions, I have succeeded in removing the irritability of the strictures by a few applications of the potassa fusa, after which the obstruction has yielded to the common bougie. In some persons, the continued presence of a catheter in the urethra causes so much irritation and subsequent in-

flammation, that this treatment cannot be justifiably pursued. In such cases, where rigors are apt to occur from the passage of the urine after the use of the bougie, their occurrence may often be prevented by relieving the bladder when required, by the introduction of a small gum-elastic catheter without its stilette, the patient having been, of course, desired not to pass his water. As the stricture becomes dilated, the introduction of the catheter will, probably, not long be required.

It is proper, however, here to observe, that by keeping patients under the influence of opium a little before, and after, the introduction of instruments, the occurrence of rigors will often be prevented. In cases of extravasation of urine, either from ulceration or accidental rupture of the urethra, a catheter should, if practicable, be passed into the bladder and retained. In strictures highly predisposed to spasm in which a bougie may be strongly grasped for some length of time, the retention of a catheter for a few hours will often be of great use. In some persons, however, retention of a catheter in the bladder, causes so much irritation of that organ as to render its presence almost insupportable; and a patient, under such circumstances, will often withdraw the instrument himself, regardless of the result. In such cases our object can often be obtained by withdrawing the catheter a little way out of the bladder, an inch will probably be sufficient. It must be fixed in

that position, and whenever the patient requires to pass his water, the instrument should be gently pressed forward for that purpose.

There can be no doubt that vital dilatation may be sometimes advantageously practised in stricture patients whose time is at their own disposal; but in cases where this plan appeared to me to be applicable I have usually preferred the treatment by the *potassa fusa*. If, however, the potash had proved unsuccessful, and no urgent symptoms been present requiring more immediate removal of the obstruction, I should certainly have made trial of vital dilatation before resorting to division of the stricture. Mr. Guthrie, who has had much experience of this method of treatment, informs us, in his work on the "The Anatomy and Diseases of the Urinary and Sexual Organs," that he has been successful with it in overcoming the obstruction when not of any great extent. He has related some interesting cases in illustration of this treatment.

The treatment of stricture by vital or mechanical dilatation will require much attention on the part of the surgeon, and self-denial on that of the patient. If the latter be prudent, live rather low, and abstain entirely from fermented liquors, the surgeon may perhaps slowly effect complete dilatation of the obstruction with but very little medical treatment beyond the exhibition of an opiate every night at bed-time, followed by a dose

of castor oil in the morning. These precautions, with, probably, the occasional application of a few leeches to the perineum, will in most cases be successful in keeping within safe bounds the irritation resulting from continued retention of instruments in the urethra. In some cases, however, so much inflammation of the mucous membrane of the urethra and its adjacent textures will ensue, the mischief, probably, extending to the bladder, that this treatment must be given up, at all events for some little time, if not entirely abandoned. Whenever this practice is pursued, it will be a great relief to the patient if the catheter or bougie be occasionally withdrawn, and the urethra left quiet for a day or two, or even for a few hours. This can, I think, generally be done without interfering with the ultimate success of the treatment.

The error, I believe, most likely to be committed in this mode of treating strictures, is, that of increasing the size of the catheter or bougie too quickly, an error which should be especially guarded against, as nothing is perhaps more apt to cause mischief than over-distension of tissues, which are in these cases more or less irritable and inflamed. Besides the fact, previously stated, should always be remembered, viz., that strictures quickly dilated are more likely to return than when their dilatation has been slowly accomplished.

CHAPTER III.

ON THE OPERATIONS FOR DIVISION OF STRICTURES
AND PUNCTURE OF THE BLADDER.

ALTHOUGH this subject has been noticed in a former part of this work, it may be as well to inquire more particularly what are the circumstances in which these operations may be required ; and, when necessary, which of them should be selected as most advantageous for the patient.

Continued retention of urine may place life in such peril, that one of these operations will be the only chance of its preservation. Under long suffering from a stricture impervious to instruments, the general health may gradually fail, and the bladder become so irritable as to render exceedingly hazardous any further delay in giving a free passage to the urine. These are not, however, the only circumstances in which division of a stricture may be required. It may so happen, that although a stricture has long been impassable to instruments and there be no retention of urine,

whilst the powers of the constitution remain but little impaired, an operation will be equally necessary as in the instances previously mentioned. It is true that such necessity may not be so apparent to the sufferer ; but to the surgeon, with whom “coming events cast their shadows before,” the necessity is quite as palpable. The surgeon foresees the mischief which, sooner or later, must occur behind the obstruction. He knows that at any time an ulcerative breach may be made in the urethra ; or, the natural barriers to the urine may be forcibly burst by the powerful action of an hypertrophied bladder, when all his art, which a few moments before had been all potent to save, will, in all probability, be exerted in vain. If, after the failure of other and less severe means of overcoming the obstruction, continued retention of urine, a breaking up of the general health, or impending extravasation of urine should render an operation necessary, it will then be the duty of the surgeon to adopt that which will be attended with the least hazard, and likely to afford the most permanent relief to his patient. With a few exceptions, in which particular circumstances may render puncture of the bladder the most desirable mode of procedure, division of the stricture is the operation that should be performed. There are two modes of effecting this, the division, from within, by the lancetted catheter ; or, from without, by perineal incision. Each of these

operations has its advocates. Should the obstruction be in the straight part of the urethra within five and a-half inches, it may be divided by the lancetted catheter without much risk, as the direction of the instrument can be ascertained with tolerable accuracy by the finger. It will be far otherwise, however, should the stricture be beyond five and a-half or six inches, as at the curve of the urethra, for then the same instrument may do much mischief even in the hands of the best surgeon.

In an irregular hard stricture, at a distance where the finger cannot possibly distinguish if the lancetted catheter be in the direct line of the urethra, it must be by a fortunate chance should the incisions be made in the proper course. I know that many successful cases have occurred in which the bladder has been safely reached by this method; but, I know, too, that extremely untoward events have also happened from the use of the lancetted catheter. In some instances, the bladder has not been entered. In others, hæmorrhage of an alarming character has occurred, and, occasionally, even extravasation of urine. In one case the seminal ducts were divided, and the patient rendered impotent for life. This operation has even been fatal. When cutting with the lancetted catheter through a hard and intricate passage to the bladder, we shall be somewhat in the position of the seaman without his chart and com-

pass, for, like him, although we may chance to go in the right direction, we shall be just as likely, if not more so, to take a wrong course. It is but proper to state, however, that Mr. Guthrie, a very high authority on this subject, has successfully employed the lancetted catheter in some cases where the stricture was in the curved portion of the urethra, and in a manner that is certainly attended with less risk than the method usually adopted; but then it will not answer should the obstruction be long, hard, and narrow. This surgeon, with a No. 6 cutting instrument, divides merely the face of the stricture, usually its hardest part, and then introduces a No. 4 silver catheter, which he has in several instances succeeded in passing into the bladder.

This is certainly a considerable improvement in the use of the lancetted catheter. Should the perforation, however, have been successfully accomplished, there is still the great disadvantage in the division of strictures by this method, that when beyond a very slight extent, they will be exceedingly difficult to keep open, a great objection to the operation, even if there were none other. After reflecting upon the subject, I think it cannot excite much surprise, that this operation should so often fail in affording permanent relief. The great majority of cases in which it can be at all justifiable, will be old hard strictures, impassable to the bougie, and before having recourse to it,

we may as well consider what is effected by its performance in such instances. Two incisions are made by the lancetted catheter in the hard strictured portion of the urethra, by which the surgeon is enabled to force the instrument through the obstruction into the bladder, and thus, by incision and laceration, the immediate object is perhaps gained. But to preserve this advantage, a catheter must be retained some little time; or, if that cannot be borne, a sound must be introduced more or less frequently, to keep open the breach made in the obstruction. It will be well for the patient if he can bear for some few days the retention of a catheter in his bladder, as the wounded parts will then be protected from the passage of the urine. It often unfortunately happens, however, that so much irritation, as well as more formidable evils, are caused by retention of the catheter, that the surgeon is obliged to rely upon the occasional introduction of the sound as his only hope of keeping open the passage. What must be the effect of urine, in these cases often more irritating than usual, passing over incised, lacerated, and highly sensitive parts? Why that which any one, without being endowed with the sagacity of a Hunter, might naturally expect, inflammation, which may so increase the condensation of tissue, as eventually to make the stricture worse than ever. Surgeons who have practised this operation, in cases where the obstruction is of

more than slight extent, know, that although it may be possible to get a No. 10 catheter into the bladder immediately afterwards, yet should it be necessary to withdraw the instrument for a time, it will often be impossible, without using injurious force, to pass one of half that size. It should always be borne in mind, that the tissues divided in this operation, have a strong tendency, from their elastic nature, to close again, especially when exposed to the passage of the urine. In some of these operations, performed too by no bunglers in their art, such severe hæmorrhage has occurred as nearly to fill the bladder with coagulated blood, and cause the patient hours of agony from retention of urine. False passages also have been made, and extravasation of urine has sometimes occurred when this operation has been performed by those who have become most expert in its performance.

By the advocates for the use of the lancetted catheter, the account here given of the effects of that instrument, will, doubtless, be considered a very partial one. It may be said, and with truth, that the disadvantages, and not the advantages, have been described. The lancetted catheter has always appeared to me to be a very dangerous instrument, and I feel assured, that there are seldom any advantages to be gained by it that cannot equally be attained by safer means. I am very willing to acknowledge my strong dislike to the

lancetted catheter, for, in using it beyond the straight part of the urethra, I should dread every advance of the instrument, feeling no confidence in its taking a right course. It is, after all that can be said, a kind of stabbing in the dark, which is as likely as not to mistake its proper object.

When undertaken for the relief of a stricture in the curve of the urethra, it certainly appears to me, that the operation with the lancetted catheter, except its use be confined merely to division of the face of a stricture as employed Mr. Guthrie, and in able hands, is one in which the advantages that may possibly be gained are never worth the risk that must be incurred in its performance. Division of the stricture from without, by perineal incision, will do all that can be done in cases which may require an operation of the kind; and, when properly performed, there will be but little chance of its causing any bad consequences.

In the division of a stricture by perineal incision, the strictured portion of the urethra will be completely divided through its whole extent, the knife will be directed in the proper course, and there will be a free external opening, so that no extravasation of urine can occur. The two best methods, as it appears to me, of performing this operation, are those recommended by Sir B. Brodie and Mr. Guthrie. It matters but little which of the two is selected, as every object of the operation will be equally well attained by

either. The method adopted by Sir B. Brodie has been described in a former part of this work. Mr. Guthrie shall speak for himself, and few men are better able to do so : “The patient being placed as in the operation for stone, a catheter or sound is to be passed down to the stricture, and held steadily against it. The rectum having been previously cleared by an enema, the forefinger of the left hand being duly oiled, is to be introduced into it, and the state of the membranous part of the urethra and the prostate are to be carefully ascertained. The principal object in introducing the forefinger is to ascertain the relative situation of the upper part of the rectum and the urethra, which latter part only approaches to, or is almost in direct application to, the rectum, near the termination of its membranous part, and the commencement of its prostatic portion. There is a certain distance, which is greater or less in different individuals, between the last inch of the rectum and the urethra placed above it. The two parts form two sides of a triangle, the apex of which is the prostate, the base the external skin, and it is within the two lines of the triangle that the operation is to be done. The surgeon, taking the catheter in his right hand, whilst the forefinger is applied to the upper surface of the rectum, moves the point upwards and downwards, so as to convey to the forefinger of the left hand a knowledge of the situation of the extremity of the instrument,

and particularly of the distance between them; and which the motions given to the catheter by the right hand will clearly indicate. The thickness of the parts between the obstruction and the rectum can be estimated with sufficient accuracy, both at the point where the left forefinger is applied, and at the surface of the skin; for although the membranous part of the urethra cannot be easily felt from an incision made on the left side of the perineum, it can be distinguished from the rectum. The next step of the operation is to divide the skin, cellular membrane, fascia, muscular and tendinous fibres, which may intervene between the upper surface of the rectum and the under surface of the anterior and middle portions of the membranous part of the urethra. This is to be done by a straight, blunt-backed, narrow, sharp-pointed bistoury, fixed in its handle, the point of which is to be placed on the skin, a little above the verge of the anus, the cutting edge being upwards, the blunt back towards the rectum, the handle being a little depressed, the point somewhat inclined upwards. The degree of inclination necessary to carry the knife inwards for the distance of an inch, and clear of the rectum, will be indicated by the finger in that part, and the eye of the operator should correspond with the point of the forefinger, so that the bistoury may be steadily pressed in to that extent, and then carried upwards, and brought out in the exact

median line, making an external incision of at least an inch and a quarter to an inch and a half, as regards the external parts. If the perineum is much hardened, and consequently unyielding, a transverse, curved, or crescentic incision should be made across it, the centre of which should correspond with the raphé, and be one quarter of an inch above the verge of the anus, or as near that distance as may be with due regard to the safety of the rectum. This gives room, and allows the parts to be separated as much as they will admit. The wound having been sponged and examined, the surgeon should again introduce the bistoury in the median line, the point being directed upwards and backwards towards the urethra, and he may then deepen the cut without fear, for the forefinger in the rectum will always inform him where the back and the point of the bistoury are. The opening will now be sufficiently large to allow the operator to lay aside the knife, and to feel for the urethra with the point of the forefinger of the left hand, keeping the end of the catheter steady against the stricture, which will be readily felt, and through which the catheter will now often pass with a little pressure. If it should not do so, and the point of the forefinger does not go beyond the stricture, and touch the sound part of the urethra, which may or may not be dilated by the urine, the knife is to be resumed, and the forefinger being placed in the wound, on the outside

of the rectum, which is to be depressed as much as possible, the back of the knife is then to be turned to it, and, whilst the patient strains, the point should expose and open the urethra, which it can do very easily, as far back, if required, as the apex or transverse portion of the prostate, or at the termination of the membranous part of the urethra. It will not be necessary, however, to go so far back, and the membranous portion may be opened at its middle part with every advantage, and with perfect safety to the intestine. The structure should now be divided and the catheter carried on into the bladder."

There are some few cases of retention of urine caused by stricture, in which, from particular circumstances of complication, especially with enlarged prostate, puncture of the bladder may be the preferable operation. An instance of the kind lately occurred to me, and will be found recorded amongst the cases at the end of this work. After the bladder has been punctured, and the stricture relieved from the force of the urine, the obstruction will then generally admit of being dilated in the usual manner.

CHAPTER IV.

ON THE MOST FREQUENT SEAT OF STRICTURE
AND FALSE PASSAGES.

UPON this subject much difference of opinion prevails. There can be no doubt that every part of the urethra, from one extremity to the other, may become narrowed by inflammatory thickening; but particular portions of the tube appear to be more frequently affected than others. The spongy tissue of the urethra, including its bulbous portion, seems certainly, in some degree, favourable to the occurrence of stricture, more especially in its worst forms; the anatomical arrangement of this tissue being probably sufficient to account for such increased liability to disease. The following is the result of a careful examination of 68 preparations of stricture.

In the spongy portion anterior to the bulb, no other part					
being affected	.	.	.	.	22
In the bulbous portion	.	.	.	.	16

In the membranous portion	13
In the spongy, anterior to the bulb, and in the membranous, portions	4
In the bulbous and in the membranous portions	10
The whole length of the urethra, more or less diseased and thickened	3

FALSE PASSAGES.

In 19 out of the 68 instances above recorded there were false passages, and in two of the 19 a false passage was observed to run for some little distance, on each side of the urethra. It has been generally supposed that by far the greater number of false passages have been made in the under part of the urethra. In the 19 examples the result was as follows :

In the under part of the urethra	10
In the upper part	2
At the side (in two of the cases two passages)	9

It is, I believe, generally supposed that an instrument is never grasped in a false passage as if by a stricture. When a false passage is made below a stricture, it usually goes under the thickened tissue formed by the disease ; and, although it may extend to ten or twelve inches, or even as far as the vesiculæ seminales, an instrument will seldom be very firmly grasped. When, however, a false channel exists by the side, or above the urethra in an old stricture, where there is much condensation of structure, an instrument

will often be as firmly grasped by the tough fibro-semi-cartilaginous tissue, as by the stricture itself. The sensation communicated to the hand when an instrument has been passed into such a false passage, will often be so similar to that caused by a hard stricture, that the one can scarcely be distinguished from the other. When these false passages take nearly the natural course of the urethra, even the most experienced surgeon may sometimes be confident that his instrument is in the right, when, in reality, it is in the wrong, channel. These false passages, in stricture, commonly commence at the bulb, or at the junction of the bulbous, with the membranous, portion of the urethra, and can, I think, be almost always avoided if solid curved instruments be used ; but bougies, whether of plaister or elastic gum, will occasionally enter the artificial channel, notwithstanding the greatest care may have been taken to prevent them. In cases of impassable stricture, complicated with one or more false passages, and where frequent attempts have been made to pass instruments, all such attempts should be given up for some little time, whilst the patient is kept as quiet as possible, and care taken that the bowels are but little disturbed. Medicines which allay irritation should be administered, such as the tincture of hyoscyamus and liquor potassæ. By these means, continued for three or four weeks, the irritation of the stricture, caused by the frequent introduction

of instruments into the false passage, will often be so much diminished as to enable the surgeon to pass an instrument into the bladder, whereas, previously, that operation had been quite impracticable.

CHAPTER V.

ON THE LIABILITY OF STRICTURE-PATIENTS TO A
RECURRENCE OF THEIR DISEASE.

IF there be one particular fact more than another, upon which writers on stricture and surgeons in general, agree, it is, that those who have been affected with this disease are extremely liable to its recurrence. That, although a stricture be fully dilated to the normal size of the urethra, yet, unless the use of the bougie be regularly continued for some length of time afterwards, the disease, except of short duration, will be likely to return. It may be as well to inquire upon what depends this unfortunate disposition to recurrence. Is the fault in the remedy, in any defect in its application, or in the natural tendency of the disease?

To use the bougie successfully, it is very desirable to understand, as far as possible, the precise manner in which it acts; and it will be useful to

bear constantly in mind, that its action is of two very different kinds, the one mechanical, the other vital. The former, like the wedge, produces its effect by its distending power; the latter, by stimulating the absorbents to remove the thickened tissue, the essential part of the disease. It is possible that, by the mechanical action of the bougie, a stricture may be fully dilated to the natural size of the urethra, and beyond this it is injurious to carry the dilatation; whilst, at the same time, the greater part of the disease itself, or that which is capable of a reproduction of the contraction, may still remain. The narrow way may, indeed, have been made wide, and thus one great object gained in having procured a free passage for the urine, consequently the removal of no inconsiderable source of urethral irritation. Yet there will be still much left to accomplish before the disease is cured. Until the thickened tissue be removed, neither the surgeon nor the patient will have much upon which to congratulate themselves. The bougie will indeed have but half done its duty; and it is only by its continued use, availing ourselves of its vital action in stimulating the absorbents to remove the cause of the disease, the thickened tissue, that we can hope for final success. There is surely no difficulty in comprehending why it is that strictures, slowly dilated, are less likely to return than when that process is more quickly accomplished.

We cannot be much surprised at the almost certain return of strictures treated by retention of the catheter, when dilatation is usually effected in three or four weeks' time; more especially as, when thus treated, there is an additional reason for the recurrence of the contraction,—which is the injury, more or less, done to the urethral mucous membrane, and adjacent parts, by long-continued retention of instruments, which, when withdrawn, leave an irritable inflamed surface, exposed to the passage of the urine, the pain, during micturition, being frequently so severe as to be compared by patients to the application of a hot iron. Of course, whilst the catheter is retained, the urethra is protected from that source of irritation. In this treatment, by retention of the catheter, the stricture is merely stretched, and, as must naturally be expected, will contract again on removal of the distending power, as by far the greater part of the disease remains. In many cases so treated, so quickly, indeed, does re-contraction take place, especially if dilatation have been rapidly effected, that, on the following day after the removal of a full-sized catheter, it will often be impossible to pass one of half the size.

The lesson to be learned from these observations is this: that our treatment, to be successful, must not be confined to the mere dilatation of a stricture, but extended to the removal of the diseased tissue. How is the latter object best to be

accomplished by the bougie? In the first place, the dilatation should be very gradually effected, bearing in mind, that the vital action of the bougie is not its least valuable quality, to secure which, it is especially desirable to avoid over-distension of the diseased tissues; absorption being best effected by a gentle pressure of the instrument, which must not be retained long enough to cause much irritation. Some observations on this subject will be seen in the first part of this book. It appears to me, that the most common cause of the return of a stricture is, that the thickened tissue, the essential part of the disease, has not been entirely removed. Another cause of a recurrence of the disease, but less frequent than the one just mentioned, is the existence of chronic inflammation, congestion, or, perhaps, mere morbid sensibility of the lining membrane at the seat of stricture, which often remains long after full dilatation has been accomplished. A patient, therefore, should never be considered cured whilst, on the introduction of instruments, that portion of the urethra where the obstruction had been, either feels harder than the other parts, or, should the bougie cause much increase of uneasiness when passing over the urethra at the seat of disease. Persons under the latter circumstances, are often liable to a gleety discharge on taking cold, or from indulging in any excess. In this state I have often seen much benefit derived from

the occasional introduction of a bougie, well smeared with mercurial ointment. It is best to begin with the ointment in the proportion of one part to three of lard, and gradually increase its strength. In some old chronic cases I have, however, at once used the strong mercurial ointment, with no other inconvenience than that of a sometimes rather severe smarting sensation, of brief duration. It is very probable, that the mercurial application may also have had some effect in promoting absorption of any remaining hardness, as well as in relieving irritation and inflammation. I am confident that this treatment, under the circumstances just mentioned, has succeeded in removing a disposition to gleety discharge, when other means have failed. Mr. Guthrie, in his work "on the Anatomy and Diseases of the Urinary and Sexual Organs," which few surgeons can read without advantage, has recommended the application of his nitrate of silver ointment, composed of ten grains of the salt, one drachm of ung. cetacei, and fifteen minims of the liquor. plumbi diacetatis, to irritable spots in the urethra. His mode of applying the ointment will be seen in his work. When desirous of confining the application of the mercurial ointment to any particular part of the urethra, I use a common gum catheter, with a piece of thread tied round the stilette at its end, so as to fill up the instrument. The ointment is then

inserted in the hole in the side of the catheter, the stilette, of course, having been withdrawn, and kept beyond that part until the seat of disease is reached, when the stilette must be pushed home. This is undoubtedly the best method of using Mr. Guthrie's ointment to irritable spots of the urethra, as recommended by him.

When employing the mercurial ointment for the relief of irritation or inflammation, or to promote absorption, I generally use the common bougie, for obvious reasons. In cases of highly irritable urethra, so frequently resulting from self abuse, whether there may have been stricture or not, I have seen considerable improvement effected by an occasional introduction of a bougie covered with an ointment, of one part of extract of belladonna to seven of lard. I have had good reason to believe that the unfortunate habit just mentioned, is a much more frequent cause of stricture than has generally been supposed. It has been previously stated that strictures, treated by the potassa fusa, were less likely to return than when the bougie only had been used. To secure so desirable an object, however, the application of the caustic potash must be continued until the whole of the thickened tissue be removed, which can be safely effected, except in cases where the stricture is of considerable extent, and of a cartilaginous hardness. Although, under the latter circumstances, the regular and long-continued use

of the bougie will commonly, in a great measure, do away with the tendency to re-contraction ; yet, in many instances, the use of the instrument cannot safely be discontinued during the entire lifetime of the patient. I should, indeed, strongly advise persons who have had bad strictures always to be on the safe side, and not to be satisfied without the occasional introduction of a bougie, if only to assure themselves of their continued immunity from the disease. This is, however, a subject so all-important to those who have suffered from this most troublesome, and, when neglected, often fatal malady, that, to enforce the advice just given, I shall conclude this chapter by quoting the opinions of two illustrious surgeons, of unrivalled skill and experience ; the one, long the boast of France, and whose warning words, though now hallowed by the silence of the grave, are still echoed by nature's changeless voice ; the other, the first of English surgeons, and, happily, yet living.

Dupuytren, when concluding his clinical lectures on the treatment of strictures of the urethra, observed : "That whatever care may be taken in the dilatation of strictures, the dilatation is but temporary in the greatest number of persons, and the contraction has always a tendency to return. This tendency to return has induced me to cause a bougie to be passed every ten, fifteen, or twenty days." Sir B. Brodie, in one of his

clinical lectures on stricture, has given us the result of his great experience on this subject in the following words: "After a patient has conceived himself to be cured, and every symptom of the disease vanished, it is not an uncommon thing for him to suffer a relapse, and, in all probability, a relapse of far greater danger than the previous attack. From what does this arise? From his not continuing, at regular intervals, to pass the instrument, notwithstanding the disease should seem to have disappeared. It is the neglecting to do this which occasions so many obstinate cases of stricture. To pass it once in two or three weeks is enough, but it must never be thrown aside as useless during the life of the patient, if he desire to be freed from his troublesome affliction."

A FEW PARTING WORDS TO THE STUDENT.

NEVER omit any proper opportunity for the introduction of instruments into the bladder, either in the dead or living. In your admiration of the more brilliant operations of surgery do not neglect the less showy ones, required in the treatment of diseases of the urethra and bladder. Remember, the former are of comparatively rare occurrence to the latter, than which there are none that require more manual dexterity, or are more fully appreciated by patients. To those who regard, as of slight importance, the apparently trivial operations of passing a bougie or catheter, I can assure them that there are few instruments which have been productive of greater mischief in unskilful hands, and that dexterity in their use is as requisite as in any part of operative surgery. What said one of the most expert operators that this or any other country has produced! "The operation of introducing a catheter through what has been called an impermeable stricture, is, without doubt, the most difficult in the whole range of surgical operations, and requires all the prudence, science, and skill of a master."—*Liston's Operative Surgery*.

C A S E S.

CASE I.—*Irritable impassable stricture treated by the potassa fusa.*

W. K., Esq., of middle age, applied to me, Dec. 31, 1840, with strictures of twenty years' duration. His urine, which was highly alkaline, had long been voided with great difficulty. He had been subject to occasional and severe attacks of retention of urine, and all attempts to get an instrument into his bladder have been, for a long time past, unsuccessful. The attacks of retention have been always attended with rigors and considerable constitutional disturbance. This gentleman was of a very nervous, excitable temperament, and much dreaded any attempt to pass a bougie, as all operations of the kind had latterly been followed by rigors and retention of urine. He was taking the nitro-muriatic acid, which was continued. I found, on examination, that a No. 2

bougie was stopped at four inches, by a stricture, to which the potassa fusa was at once applied. Jan. 2nd, the No. 2 bougie passed through the first stricture as far as six inches, where it was stopped by a second, to which the potassa fusa was also applied. This second stricture was very irritable, and three or four drops of blood came away when the bougie was withdrawn. The armed bougie was used again on the 5th and 7th. No rigors had yet occurred from these operations, nor any retention of urine. As, however, a rather free mucous discharge had ensued from the last application of the potash, the urethra was left undisturbed for a week. 14th. The mucous discharge has entirely ceased, and the stream of urine perceptibly improved during the last two days. The potassa fusa was applied only to the second stricture, as the first had yielded considerably. 15th. I was sent for early this morning to visit my patient, who was staying in the city, and found him much alarmed by a return of his rigors, which had occurred soon after he had voided his urine at bed-time. I was, however, pleased to find that the water had been passed more freely than for some length of time previously. An opiate was ordered, and when he again called upon me, which was on the 19th, I learned that there had been no recurrence of the rigors since my visit; also, that the stream of urine was improving. The potassa fusa was used, and its

application repeated on the 25th, the 28th, and on the 3rd, 8th, and 12th of February, when urgent business rendered it necessary for this gentleman to return to his residence in the country. At this time the bougie had advanced about a quarter of an inch into the second stricture, and the stream of urine was progressively improving. I wrote to the surgeon under whose care my patient had previously been, and advised him to continue the use of the armed bougie. A few days afterwards I received a letter from that gentleman, in which he informed me of his having succeeded in passing a No. 5 bougie into the bladder, after one application of the potassa fusa, the armed bougie having, in fact, passed through the stricture. I heard long after this from a friend of Mr. K.'s, that his stricture continued so irritable, that he became dissatisfied with his progress, and discontinued the use of the potassa fusa. I believe he has since applied to some other surgeon. Although this case cannot be considered a successful one, yet it is not the less instructive on that account. It certainly illustrates the powers of the caustic potash in overcoming a highly irritable impassable stricture; also, the slight irritation caused by the remedy. For, whereas rigors, and often, retention of urine, had for some length of time almost invariably succeeded the introduction of the common bougie, yet the rigors occurred only once, and the retention not at all, from the application

of the potassa fusa. The principal difficulty of the case had ceased after the introduction of the No. 5 bougie into the bladder, but most probably the highly alkaline urine, to which this patient was so predisposed, passing over a very irritable stricture, was the cause of the little progress subsequently made in the treatment. In this case a gum-elastic catheter should have been kept in the bladder, or, at all events, in the urethra, for some little time; and there can then be but little doubt, that with strict attention to the state of the urine and digestive organs, the subsequent dilatation might have been eventually accomplished. It is, however, difficult to keep patients under these circumstances, for where but slight progress is made towards improvement, they very naturally, perhaps, seek other advice.

CASE II.—*Old stricture impervious to instruments ;
with a false passage.*

Mr. D., about 50 years of age, applied to me, May 4th, 1841. He had long experienced great difficulty in passing his water, having had stricture for twenty years. He told me that no instrument had been ever got into his bladder, notwithstanding great many attempts to effect that object had been made, and that he was sure a false passage had been

made on examining the urethra with a No. 2 silver catheter, it was stopped at six and a-half inches, very slight pressure having caused free bleeding.

May 6th. On introducing a No. 3 bougie to mark the exact distance of the stricture before applying the potassa fusa, I found that it readily passed to eight inches, and that the instrument was not grasped. Feeling convinced that the false passage had been entered by the bougie, it was immediately withdrawn, and one more curved used. Keeping this well to the upper surface of the urethra, it was stopped at six and a-half inches as at first. I ascertained that the false passage commenced at the lower part of the stricture, taking its course along the right side of the urethra. I applied the potassa fusa very carefully, and after the second application, a No. 3 bougie advanced half an inch into the stricture, being there firmly grasped. It required fifteen applications of the potassa fusa before a bougie could be passed into the bladder. The stricture, which at first bled freely on slight pressure with the bougie, ceased to do so at all after eight applications of the potassa fusa, the stream of urine having begun to improve after the fifth. The stricture soon became sufficiently dilated to admit a No. 8 bougie, when the patient discontinued his attendance. Notwithstanding the greatest care was taken to avoid such an occurrence,

the bougie two or three times entered the false passage, but was, of course, instantly withdrawn.

CASE III.—*Irritable hæmorrhagic stricture treated with potassa fusa.*

A gentleman, 40 years of age, applied to me on the 1st of April, 1841. He had been troubled with a stricture of the urethra for several years, accompanied with occasional attacks of retention of urine, which were invariably relieved by the introduction of a small bougie. On examination, I found an obstruction at the bulb, through which, after a little pressure, a No. 6 bougie passed into the bladder. From the patient's urgent desire to pass his water, the bougie could not be retained more than two minutes; and, when it was withdrawn, about a teaspoonful of blood followed; a similar discharge having occurred whenever instruments had been introduced. The application of leeches to the perineum, and the exhibition of antispasmodic medicines, had no effect in diminishing the irritability of the stricture. After several unsuccessful attempts to dilate the stricture with the common bougie, its extreme irritability not admitting a larger size than No. 6, my patient at length permitted me to use the potassa fusa, to

which he had previously objected. Three days after the first application of the potash, a No. 6 bougie was passed with much less pain than before, and was retained for ten minutes. After four more applications of the potassa fusa, at intervals of four days, a No. 8 bougie could be readily passed without subsequent hæmorrhage or irritation. As the stricture from this time readily yielded, admitting a larger bougie at each successive introduction of the instrument, until one of full size could be passed without the slightest difficulty, there was of course no advantage in the further application of the potassa fusa. I may add, that the remedy had so entirely removed the irritability of the stricture, as well as its disposition to bleed, that, latterly, the bougie was retained half an hour without causing any uneasiness.

CASE IV.—*Stricture from injury of the perineum, impassable to instruments, treated with the potassa fusa.*

R. B., Esq., 45 years of age, applied to me in October, 1841. He had been a great sufferer from stricture of the urethra, which he attributed to an injury of the perineum, received at college whilst playing foot-ball. This gentleman had long passed

his urine with extreme difficulty, and was very much depressed from the supposition that his disease was irremediable. He had been under the care of a relative, who had for five months persevered in attempts to relieve him, but never could succeed in passing the smallest bougie. On examination, I found the urethra to be highly sensitive, and the smallest bougie was stopped at four inches. I at once applied the potassa fusa, and, after four applications, a No. 3 bougie was passed on to six inches, but could not be made to advance further, being very firmly grasped. This stricture, which was very irritable, required several careful applications of the potassa fusa before it yielded so as to allow a No. 4 bougie to pass on into the bladder. The stream of urine had much improved after the third application of the potash to the second stricture. This gentleman could not remain under my care for more than six weeks, being obliged to return to his residence at a considerable distance in the country. When he left me I could pass a No. 8 bougie. He was strongly urged to continue regularly the use of the bougie; but as he had a small urethra, I did not advise him to increase the size of the instrument beyond a No. 9. Being desirous to ascertain this patient's present state, I wrote to him; and in answer to my latter, he informed me in a note, dated March 21, 1849, that he has never experienced any inconvenience in passing his water since he was un-

der my care, but that he occasionally passes a No. 8 bougie.

CASE V.—*Hard impassable stricture treated with the potassa fusa.*

J. O. H., Esq., 29 years of age, had two years before his application to me, been subject to occasional attacks of gleet with more or less difficulty in voiding his urine. He had also, during that time, been much troubled with pain in the loins, perineum, and thighs. An examination of the urethra disclosed a stricture at two and a-half inches impassable to the smallest bougie. Mr. H. had been relieved from one or two attacks of retention of urine by the gentle and continued pressure of a bougie against the stricture. Having made two or three unsuccessful attempts to get a bougie through the stricture, I applied the potassa fusa on the 27th of October, 1844, repeating its application on the 29th, and on the 1st of Nov. when a No. 3 bougie passed through the stricture, but was stopped at four and a-half inches. After four applications of the potassa fusa to the second obstruction, a No. 4 bougie was passed on into the bladder. No other inconvenience, beyond a slight discharge of mucus tinged with blood, was

caused by the potash. After the second application of the armed bougie to the stricture at four and a-half inches, the stream of urine began to improve. As the second stricture, which was an inch in length, and of a cartilaginous hardness, remained very undilatable, not permitting the introduction of a bougie larger than No. 4, I once more applied the potassa fusa, on the 28th of Nov., slowly passing the armed bougie backwards and forwards through the whole length of the obstruction. I did not again apply the potassa fusa, as the stricture was at length dilated, although slowly, by the use of the silver sound, so as to admit the introduction of a No. 13, which size I occasionally pass without any difficulty, although a part of the hardened tissue of the stricture remains. During the last year, however, there has been no tendency to contraction, although I have not passed the sound more than four times.

CASE VI.—*Impassable stricture treated with the potassa fusa.*

John Foy, aged 35, applied at the dispensary on the 28th February, 1843. He had long suffered from a difficulty in passing his water, having been latterly disturbed several times during

the night as well as day from an urgent desire to empty the bladder. The urine now comes away by drops, or in a very fine stream. Rigors frequently occur. Several unsuccessful attempts have been made at various times to pass a bougie, which attempts, it appears, invariably caused pain and a free discharge of blood. On examination, a stricture was detected at four and a-half inches impassable to the smallest bougie, which, on very gentle pressure, caused a little oozing of blood. I applied the potassa fusa on the 2d of March, and after three applications, a No. 3 bougie was passed into the bladder. At the end of a month, the stricture admitted the introduction of a No. 8 bougie, and the man considered himself so well, that he did not continue his attendance at the dispensary. This case is an example of many others, in which patients, especially of the poorer classes, suffering from strictures, as soon as they are sufficiently relieved so as to be able to pass their water in a fair stream, discontinue their attendance upon the surgeon.

CASE VII.—*Irritable stricture removed by the potassa fusa.*

R. W., Esq., a medical man, of middle age, had long suspected that he had stricture of the

urethra, having for some length of time observed some yellow spots upon the front of his shirt; also, that he occasionally passed his urine with a little difficulty. He had felt at times an aching pain in the perineum; but from the gradual diminution in the stream of urine, was not aware that it was much smaller than in the healthy state. With some slight difficulty, on the 27th of Jan. 1845, I introduced for this gentleman a No. 4 bougie. There was a stricture at the bulb half an inch in length. Finding, from the irritability of the stricture, that no progress had been made on the 13th of February, I applied the potassa fusa, and repeated the remedy on the 15th, 17th, 19th, and 21st, when I could pass a No. 6. The urethra was now left quiet for several days.

March 1st. As the No. 6 bougie entered the stricture with rather more difficulty than when last used, and the gentleman being very anxious to get entirely rid of his disease, having no fear of the remedy, I applied the potassa fusa more freely, passing the armed bougie slowly backwards and forwards along the obstruction. The only inconvenience caused by this application, was a severe scalding pain felt by the patient when first passing his water afterwards, and a slight bloody mucous discharge, which continued for ten days. At the expiration of that time, the stream of urine had greatly improved. No attempt was made to

pass a bougie until all urethral irritation had subsided, when a No. 8 was easily introduced. The stricture appeared to have been completely removed by the last application of the potassa fusa, as no difficulty was subsequently experienced, the size of the instrument having been gradually increased to a No. 16 silver sound. I have seen this gentleman frequently, and it is his conviction that the obstruction was entirely removed by the last rather free application of the potassa fusa. He, however, occasionally passes the No. 16 sound.

CASE VIII.—*Retention of urine from stricture, with enlarged prostate, &c. Dilatation by retention of the catheter.*

On the night of April 2, 1846, I was requested to visit Charles Thompson, a dispensary patient, by trade a brazier, who was suffering acutely, having passed no urine for twenty-four hours. He had long been troubled with some difficulty in passing his water. On examination, a stricture was found at four and a-half inches, into which, after a few minutes' continued pressure, I succeeded in getting the point of a No. 2 silver catheter. I had made previous unsuccessful attempts with plaister and catgut bougies. Although the

catheter was pressed forward for about ten minutes, it did not advance more than a quarter of an inch into the stricture, which felt very hard. A few drops of urine came away when the catheter was withdrawn. The usual antispasmodic remedies, such as leeches to the perineum, the warm-bath, opium, purgatives, &c., were employed.

April 3rd, 9 A.M. About a wine-glassful of urine had been passed by drops during the night, and the more urgent symptoms were much relieved. I now fixed the No. 2 catheter in the stricture, and, on my visit in the evening, was informed that there had been a more or less constant dribbling of urine through, or, by the side of the instrument, which had been left unplugged. The catheter could now be passed to five inches, and was fixed in that position.

April 4th, 9 A. M. The catheter had advanced a little, but was withdrawn at the patient's urgent request; it was, however, again refixed in the evening.

April 5th. The catheter had advanced to five and a-half inches, but was withdrawn, as it now caused considerable pain and irritation. As this man had been a free spirit drinker, his general health having become much impaired, and his urine highly albuminous, I thought it best to leave the urethra quiet for some length of time. The prostate was felt through the rectum to be enlarged.

April 26th. Since the last report, the urine

has been passed during the day by occasional straining efforts, about a wine-glassful coming away at a time, generally by drops, but occasionally in a very fine stream. During the night it has gradually dribbled away into a tin bottle, contrived by the patient, and secured in a convenient position before going to sleep. I now again fixed in the urethra the No. 2 catheter, which advanced to five and a-half inches, as before.

April 27th, 9 A.M. The man had withdrawn the catheter after it had been retained five hours. After some little perseverance this morning, I succeeded in passing the No. 2 catheter into the bladder, where it was fixed. The greater part of the urethra, from the commencement of the strictured portion to the bladder, felt hard and rugged. At 8, P. M., I found the man had again withdrawn the catheter an hour before my visit, having immediately afterwards voided in a continued stream about half a pint of bloody urine. He said that he had not passed his water so well for a great many years. The size of the catheter was gradually increased, by fixing occasionally a larger instrument in the stricture, and retaining it from three to six hours at a time. On the 4th May, I could pass a No. 7 into the bladder. That viscus appeared in a great degree to have lost its contractile power. The urine passes best when the man lies down. As he is now obliged to go to work,

I have advised him to pass the catheter morning and evening, so as completely to empty the bladder, which he accomplishes best in the recumbent position.

On the 24th of June, the bladder had very much recovered its power, and the catheter is now very easily introduced by the patient. I advised him to continue the introduction of the instrument for some length of time, regularly morning and evening. I now lost sight of Thompson, but have since learned that he did not live many months, having died from an attack of low fever. In this case it was necessary to use a silver catheter, for the purpose of dilatation, as from the hardness and irregularity of the stricture, I could never pass one of elastic-gum.

CASE IX.—*Irritable stricture removed by two applications of the potassa fusa.*

John Gatey, aged 39, admitted a dispensary patient, May 15, 1845. This man has for some length of time past experienced more or less difficulty in micturition, and is obliged to rise several times during the night for that purpose. His urine is passed in a very fine stream, which frequently stops, and requires much straining for its expulsion. On introducing a No. 2 bougie, it was

stopped at six and a-half inches, but after a little pressure, passed on into the bladder.

18th. The stricture was very irritable, the No. 2 bougie having been passed with greater difficulty, and causing more pain than at first. I therefore applied the potassa fusa.

22nd. I again used the caustic potash, and on the 28th was enabled to pass a No. 5 bougie with less pain and spasm than had been previously caused by the No. 2. After the second application of the potassa fusa, the stricture rapidly dilated so as to admit, on the 24th of June, the introduction of a No 16 steel sound.

CASE X.—*Irritable stricture removed by the potassa fusa after failure with the nitrate of silver.*

T. R., Esq., about 30 years of age, residing in the country, first applied to me April 20, 1848, having been for some time past much troubled with a stricture of the urethra. This gentleman has had gonorrhœa three times, and dates the origin of his present complaint to the last attack, which he endeavoured to cut short by the strong nitrate of silver injection, made with a scruple of the salt to an ounce of water. He used the injection frequently, but did not continue it more than two days, from the severe pain and scalding that

ensued. His disease was not cured by this remedy; indeed he has never since been entirely free from a gleet discharge. It was about eight months after the commencement of the last gonorrhœa, that he first observed a diminution in the stream of urine, to which, however, he paid no attention for twelve months, when his surgeon succeeded with some difficulty in passing a No. 5 silver catheter into the bladder. The introduction of the instrument caused him much pain, and was followed by a little bleeding. The stricture was at length dilated by the plaister bougie sufficiently to admit a No. 13, but the introduction of the latter caused severe pain and a discharge of blood. To remove the irritability of the stricture, and to stop the gleet discharge, the nitrate of silver was applied six times, with Lallemande's instrument, at intervals of five days, the first application having been made on the 20th of December, 1847. The caustic did more harm than good, as No. 10 is the largest sized bougie which has been passed since its use. It should be stated, however, that, although a No. 13 had been passed two or three times, that size could not be gone on with, as this stricture became so irritable for some time afterwards, as to admit with difficulty the introduction of a No. 6 or 8. Under these circumstances, the gentleman, by the advice of his medical attendant, consulted me.

On the 20th of April, 1848, I passed with

a little resistance a No. 8 silver sound through a stricture at five inches. On the following evening, a No. 6 could not be passed with any moderate pressure; I, therefore, at once applied the potassa fusa.

22d. The armed bougie was passed slowly backwards and forwards through the stricture, which was about half an inch long, and felt hard. The potassa fusa was applied daily until the 27th, on which day a No. 11 silver sound was passed with facility. The stricture now readily yielded, and on the 7th of May, I was able to pass a No. 14 sound, which was the full size of the urethra. The application of the potassa fusa afforded so much relief, and time being a great object with my patient, that I did not hesitate to use the potash daily. The gleet discharge had almost entirely disappeared until the introduction of No. 14, which appeared to cause it to return slightly. Scarcely any pain on micturition was experienced during the treatment, a circumstance which very much surprised the patient, who had suffered so much in that respect after the application of the nitrate of silver. When this gentleman left town, on the 12th of May, the morbid tissue forming the stricture, appeared to have been removed, as no difference when passing the sound was felt between the formerly obstructed, and other parts of the urethra.

CASE XI.—*Return of a stricture from the patient's neglect to continue the occasional introduction of the bougie.*

John Peach, a sailor, whose state on his former application to me will be seen described in Case 22, Part I., applied to me again on the 13th of July, 1848, as bad as on his first visit in 1840. He had never passed a bougie since his former attendance at the dispensary in the latter part of September, 1840, and consequently now voids his urine with as much difficulty and straining as ever, either by drops, or in a hair-like stream. After an unsuccessful attempt to pass a No. 2 bougie, which was stopped as formerly at five and a-half inches, I applied the potassa fusa very carefully, and was obliged to repeat the application five times before any instrument could be passed through the stricture. I then succeeded in getting a No. 2 elastic gum catheter into the bladder. On the 2nd of September, I could pass a No. 5 bougie. Not having been able to increase that size from the continued irritability of the stricture, I again had recourse to the potassa fusa on the 28th, and this time applied it more freely, passing the armed bougie very slowly backwards and forwards over the whole strictured portion of the urethra, which appeared to be about three quarters of an inch. The man derived great ad-

vantage from the last application, which, in a great degree, removed the irritability of the stricture, and on the 23rd of November, I could introduce a No. 10 steel sound. From that date the man has only attended at the dispensary two or three times, being very irregular in his habits.

CASE XII.—*Stricture treated by retention of the catheter.*

May 1st, 1848, I was requested by a medical friend to visit E. C., about 35 years of age, who had long suffered from occasional attacks of retention of urine, caused by stricture of several years' duration. He was in great pain from having been unable to pass any water for many hours. I found that frequent attempts, attended by rather free bleeding, had been made to get an instrument through the stricture. After considerable perseverance, and being obliged to use the greatest gentleness on account of very moderate pressure causing some bleeding, I at length succeeded in passing a No. 2 elastic-gum catheter into the bladder, which was fixed in its position. About a pint and a-half of high-coloured urine was drawn off. The catheter was retained five days, and then replaced by a No. 4. The irritation from retention of the catheter, however, soon became so

great, that I was obliged to withdraw it, and leave the remaining dilatation to be effected by the bougie.

On the 26th, a No. 6 bougie was easily passed into the bladder, when the man was compelled to go into the country, but promised to continue the treatment until a full-sized instrument could be introduced.

This case is related as one of common occurrence, in which it is impossible long to continue the dilatation of stricture by retention of the catheter. In this instance, however, the object of its retention had been attained by opening a more free passage for the urine; and it was as well, if not better, to effect the remaining dilatation by the bougie, for reasons previously stated in the chapter on the treatment of strictures by retention of the catheter.

CASE XIII.—*Return of an impassable stricture from discontinuing the use of the bougie before the disease had been half cured; treated by the potassa fusa.*

Thomas Whitehead, aged 49, formerly under my care, as will be seen on the perusal of Case 7, Part I. of this work, applied to me again on the 25th of July, 1848. He is now able to pass his

urine only by drops, and that often with great straining, being obliged to rise several times during the night, from an urgent desire to empty his bladder. I learned that he continued to pass his water very well until four years ago, when he observed a slight difficulty in that act, which has been gradually increasing to the present time. Being unable to get a bougie beyond six and a-half inches, I at once applied the potassa fusa, and on the 27th repeated its application.

29th. The urine has been passed during the last two days in a very small stream—the potassa fusa was applied.

August 1st. The stream of urine has considerably improved, and the man was not obliged to rise to empty his bladder last night. I had no difficulty in passing a No. 3 bougie.

September 5th. The size of the bougie has been gradually increased to No. 9.

Oct. 14th. Not having been able to get beyond the No. 9, I applied the potassa fusa to-day.

Dec. 18. A No. 12 was passed with facility, that being the full size of the urethra. This man has since occasionally attended at the dispensary, to have the No. 12 passed.

CASE XIV.—*Retention of urine from a neglected stricture of forty years' duration. Puncture of the bladder.*

September 21, 1848, at 6 P. M. I was requested by a medical friend to see a patient of his, 70 years of age, with retention of urine, whom he had endeavoured unsuccessfully to relieve by the introduction of the catheter. The man informed me that he had passed only a few drops of urine during the last three days. The bladder was felt distended above the pubes. There was a stricture commencing at the bulb, into which I could not succeed in getting an instrument of any kind. From the previous attempts which had been made to pass the catheter, very slight pressure against the obstruction caused some bleeding. On examination per rectum, the prostate appeared to be enlarged. A few months before his present illness, the patient had experienced an attack of congestion of the brain, which caused for some time afterwards great weakness in his lower extremities. It was ascertained that in this case symptoms of stricture had been present forty years, and that for a very long time the urine had been passed in drops, or a thready stream, with great straining; but no attention, it seemed, had latterly been paid to this complaint. Being desirous to avoid puncturing the bladder, I fixed in

the urethra a small catheter, with the hope that by gentle and continued pressure, the point of the instrument might possibly enter the stricture. The man had been kept under the influence of opium for some time previous to my seeing him. On my visit the following morning, finding that no relief had been obtained, and the symptoms of retention becoming more urgent, I resolved at once to puncture the bladder above the pubes, selecting that situation in preference to others, for the following reasons: 1st. The bladder had risen considerably above the pubes, and could not be felt through the rectum. 2ndly. The long standing disease of the urethra, and the inability of the patient to bear the more formidable operation in the perineum. 3rd. Enlargement of the prostate. To avoid extravasation of urine I made a free external opening through the skin and linea alba, nearly three inches in extent, from the symphysis pubis upwards; then, separating with my finger the pyramidal muscles, the distended bladder was readily felt. The curved rectum trocar was introduced, and two pints and three quarters of urine of the colour of coffee-grounds were drawn off. The canula was, of course, left fixed in the bladder.

September 28th. A few drops of urine only have passed by the natural passage since the operation, the urethra having been left undisturbed to the present time. The wound looks healthy,

and the man in all respects is doing well. I was able to-day to pass through the urethra into the bladder, a No. 3 elastic-gum catheter, which was fixed there. The catheter was left unplugged with a bladder attached to it. As this man was not under my immediate care, I did not see him again until October 26th. It then appeared that the catheter had not been retained for more than two days, the patient having withdrawn it himself, and it had not been again introduced for him. Not succeeding in passing the catheter again into the bladder, I fixed in the urethra a No. 5 elastic-gum bougie, so as to press gently against the stricture.

27th. 7 P. M. The bougie has been kept in, a considerable quantity of urine has passed by the urethra. The instrument which had advanced about one-eighth of an inch was again securely fixed.

My next visit was on Nov. 12th, when it appeared that the bougie had again been withdrawn by the patient from the irritation which it produced. I had no difficulty in passing a No. 5 elastic-gum catheter, which was left fixed as before.

November 21st. The catheter last introduced had only been kept in for one night, but the greater part of the urine is now passed by the natural passage. The canula had been withdrawn. I passed a No. 6 plaister bougie into the bladder,

and recommended that the size should be gradually increased. I did not afterwards see this poor man, but was informed that he died rather suddenly from an attack of apoplexy on the 30th of November. The wound made in the operation had nearly healed.

CASE XV.—*Irritable strictures, treated with the potassa fusa.*

Mr. B., a young man living with a surgeon in the country, applied to me Sept. 20, 1848, having for some time past been much annoyed with more or less difficulty in passing his water from stricture. He was much depressed in mind, having experienced no benefit from the occasional passing of bougies, their introduction always causing him much pain. A No. 6 was the largest he had been able to bear. The urine contained a slight excess of acid. On the introduction of a No. 6 bougie, I found that it was stopped by two strictures, one at two, the other at four and a-half inches. As this gentleman could not remain longer than a week in town, I at once applied the potassa fusa to both strictures, and repeated the application on the following day.

22nd. The patient says that he passes his water

with more comfort than for some time past. A No. 7 bougie was passed with facility.

26th. The stream of water has much improved. Introduced a No. 8 bougie.

27th. As the young man was obliged to return to the country, I applied the potassa fusa to both strictures with a No. 8, and advised him to have the size of the bougie gradually increased. He came to me again on the 14th of October, being desirous of having the application of the potassa fusa repeated, as the second stricture did not readily yield to the dilating power of the bougie. I therefore applied the potassa fusa to the second stricture, no stoppage having been caused by the first, to a No. 9 bougie.

He once more returned to me on the 18th of November, when I passed a No. 11 with facility, and afterwards used the potassa fusa, more to satisfy his mind, which was a very anxious one, than from any other reason. I advised him not to use a larger bougie than No. 13, that being of the full size of his urethra. As this gentleman was to come to me again if he did not soon get well, and I have not seen him since his visit of the 18th of November, it is to be presumed, that the case presented no further difficulty.

CASE XVI.—*Impassable stricture, treated with the potassa fusa.*

Mr. C. S., aged 34, residing in Gresse-street, admitted a dispensary patient July 18, 1848. This person has for several years suffered much from a difficulty in passing his water. The stream is very small, and at times there is great straining before a drop can be passed, and so considerable are at times, the efforts required to effect the expulsion of the urine, as to cause a discharge of blood. There is seldom more than half a tea-cupful of water passed at one time; and on some occasions, when unable to expel any, he has succeeded in effecting his object by the application of hot fomentations. This man had been an out-patient at a hospital, and the surgeon to the institution having failed in many attempts to pass an instrument, told him that his only chance of relief was to have an operation performed for the division of his stricture, and wished him to enter the house at once. Under these circumstances, he was advised by a friend to place himself under my care. He attributes his stricture to gonorrhœa, having had the latter complaint three times; the last having been very protracted. He has for some time past had more or less gleety discharge, and is troubled with a desire to pass his water almost

every hour, being obliged to rise several times during the night for that purpose. His general health has become much impaired, and he suffers greatly from pains in his loins and thighs. On examination I found a stricture at the commencement of the membranous portion of the urethra, which bled on very slight pressure, and the point of the instrument could not be made to enter the obstruction. As the stricture had latterly been much irritated by attempts to pass instruments, I thought it best to endeavour to relieve the irritation, by the application of leeches to the perineum, warm fomentations, &c., before resorting to the caustic potash, which was used on the 22nd, the result being the discharge of a few drops of blood and a sense of scalding when the urine was first passed after its application. The potassa fusa was again applied on the 24th; and on the 27th I succeeded in passing a No. 3 bougie into the bladder.

August 3rd. Not being able to pass the No. 3 bougie to-day, I applied the potassa fusa.

August 7th. Applied the potassa fusa. The urine has considerably improved, and he has not been disturbed during the last two nights by any desire to empty his bladder.

August 9th. Passed a No. 5 bougie into the bladder.

September 27th. As the stricture continued

unyielding to the common bougie, not admitting one larger than No. 7, which was firmly grasped, I again had recourse to the caustic potash. The gleet discharge has nearly disappeared, and there is no remaining difficulty in micturition. There was no occasion for any further use of the potassa fusa, as the stricture gradually yielded so as to admit on December the 1st, the introduction of a No. 12. I have not increased the size beyond 13, as that is as large as the urethra. The patient comes to me about once a fortnight, when I pass for him the No. 13, without the slightest difficulty, but the thickened tissue is not yet entirely removed, and it will be necessary for him to continue the regular use of the bougie for some length of time. I have alluded to the proposed operation for division of the stricture in this case, as illustrative of the power of the potassa fusa, and not to intimate any superior skill on my part, as had it not been for that remedy, I could not have succeeded any more than others without recourse to the knife. I have been equally successful in the use of the caustic potash in many similar cases where the operation for division of the stricture had been proposed by other surgeons.

CASE XVII.—*Impassable gristly stricture of long duration, treated by the potassa fusa.*

At 2 P. M., on the 12th of January, 1849, I was requested to see L. W., Esq. of middle age, who was in great suffering from retention of urine. He had passed only a few drops of water for the last twelve hours, and appeared to be greatly alarmed at his situation, from his knowledge of the impossibility of obtaining relief by the introduction of the catheter. He had strictures of many years duration, which had caused several attacks of retention of urine, the first of which occurred ten years ago. These attacks were generally treated by full doses of opium, from which he formerly soon obtained relief; but latterly his sufferings on such occasions had been very great, from the long continuance of the retention. From the repeated unsuccessful attempts that had been made by several surgeons to get an instrument through the stricture, he strongly objected to my making any effort of the kind for his relief, and assured me that such practice had, on similar occasions, only added to the irritation of a highly irritable stricture. He was at length persuaded to permit me to introduce a No. 2 plaister bougie, which was stopped by a stricture at four and a-half inches; but after a little pressure, the instru-

ment passed on to a second obstruction at six inches. I succeeded in getting the point of the bougie into the second stricture, where it was kept until the expulsive efforts of the bladder became very urgent, and then, on its having been withdrawn, nearly half a pint of urine came away, at first by drops, but afterwards in a small stream. The patient had taken a full dose of *liq. opii sedativ.* an hour before my visit, and the same quantity was ordered to be repeated in a short time.

At half past 8, P. M., no urine having been passed since my visit, I again introduced the small bougie with the same result as before.

I was called up at 5 A. M., January 13th, and repeated the operation with a similar result. An ounce of castor-oil, which had been taken at bedtime, not having operated the dose was repeated. As this gentleman had never found any benefit from the application of leeches to the perineum on similar occasions, they were not used on the present.

Jan. 13th, 11 A. M. No urine having been passed since the introduction of the bougie early in the morning, I repeated the operation, using this time one of catgut, and allowed it to remain for ten minutes, when on its being withdrawn, about half a pint of water came away, in rather a better stream than previously.

7 P. M. The patient was quite comfortable, hav-

ing been able to pass his water during the afternoon without assistance.

Jan. 14th. The potassa fusa was applied to the first stricture, causing a slight sensation of scalding when the urine was first passed afterwards, as well as the discharge of three or four drops of blood.

15th. The potassa fusa was again applied with a No. 6 bougie, which entered a quarter of an inch into the stricture. When the bougie was withdrawn, its point was covered with a little bloody mucus, and a slight burning pain was felt for a few minutes. No irritation having ensued, the application of the potassa fusa was repeated on the 16th, 17th, and 18th, on which day the armed bougie passed through the first stricture to the second, where it was retained. No bloody discharge had followed the three last applications of the caustic.

19th. The armed bougie was applied to the second stricture, which it entered about the eighth of an inch. In the evening I found that the result of the morning's operation had been a severe spasmodic pain in the perineum, which lasted about ten minutes, until the discharge of a few drops of blood afforded complete relief. Mr. W. had suffered much at various times, formerly, from this kind of pain. An opiate draught was directed to be taken at bed-time. All irritation having subsided the potassa fusa was again applied, at

11 A.M., on the 22nd, and the bougie went a little further into the stricture. 7 P.M. The urine had been only once passed, and that with scarcely any pain, since the application in the morning.

29th. The potassa fusa has been applied every day, no irritation of any consequence having ensued. On two occasions three or four spots of bloody mucous discharge appeared upon the linen. The bougie has perceptibly advanced after each application, and the stream of urine is a little improved. The irritability of the bladder has nearly subsided, the urine now requiring to be voided but once during the night.

Feb. 13th. The armed bougie has been used every day except on the 2nd, when it was omitted in consequence of a slight return of the spasmodic pain. The stream of water has much improved during the last two days, and, with the exception of yesterday, there has been no coloured discharge since the 29th of January. After the use of the potassa fusa to-day, with a No. 6 bougie, a No. 4 was passed into the bladder, the last stricture having required twenty-seven applications before the bougie could be passed through it. The urethra, for the last two inches, appeared to be of a cartilaginous hardness, and the daily use of the armed bougie caused but little irritation.

15th. After having passed a No. 4 bougie into the bladder, I applied the potassa fusa with a No.

5, gently moving it backwards and forwards over the whole strictured surface. The potassa fusa was used daily until the 2nd of March, by which time the stricture had become sufficiently dilated to admit of the introduction of a No. 8 bougie into the bladder. The water was passed in a very good stream, and with scarcely any hesitation, or, indeed, difficulty of any kind. My patient was now obliged to return into the country, much to my regret, as the stricture still felt very hard, and there was much left to be accomplished. He intended to continue the treatment himself, but promised me to apply at once to the surgeon who had previously attended him, should any difficulty arise. This he did, and I received, on the 29th of April, a very satisfactory letter from that gentleman, informing me of the great advantage his patient had derived from the use of the potassa fusa. It will be seen that, in this case I used the armed bougie every day with but few exceptions. Although, from the hard and insensible nature of the stricture, no irritation worth mentioning resulted, if my patient's time had not been of great consequence to him, I should not have applied the potassa fusa oftener than every 2nd or 3rd day. This case, therefore, must not be considered as a precedent for a similar practice. This gentleman's brother died of neglected stricture of the urethra. It has so frequently happened to

me to have had brothers under my care, with this affliction, that I have thought, at times, the disease must be hereditary in some slight degree.

CASE XVIII.—*Stricture, causing retention of urine, treated by the potassa fusa.*

Mr. G., about 40 years of age, first applied to me late in the evening of March 14th, 1849, having suffered acutely, for several hours, from retention of urine. This was not his first attack of retention; and he had long experienced more or less difficulty in passing his urine. He thinks his disease has been of more than twelve years' duration. I succeeded in introducing into the bladder a No. 2 gum catheter, which was stopped by a stricture at six and a half inches.

15th, 8 P.M. Has passed some urine with difficulty during the night and in the early part of the morning, but has been unable to void any for several hours. With a No. 3 gum catheter, which was firmly grasped by the stricture, I drew off about 16 ounces of urine.

16th, 8. P.M. Has had no retention, but his urine has been passed with considerable difficulty, by drops, and in a very small stream. A No. 3

plaister bougie was passed, and allowed to remain for a few minutes; when withdrawn it was followed by a few drops of blood. In an attack of retention, a few days before his application to me, this gentleman had applied to a surgeon, who had passed, with much difficulty, a small silver catheter, which caused great pain and considerable hæmorrhage.

18th. The urine has been passed during the last twenty-four hours with difficulty, and there was so much spasm this evening that the No. 3 bougie could not be passed; I therefore applied the potassa fusa.

22nd. Passed a No. 3 silver catheter.

25th. Not being able to introduce the No. 3 catheter I again used the potassa fusa.

28th. The stream of urine has considerably improved. The potassa fusa was applied, the armed bougie having been passed backwards and forwards along the strictured portion of the urethra, which appeared to extend nearly to the bladder.

31st. Finding, on the introduction of a No. 5 gum catheter, that it was firmly grasped, I applied the potassa fusa as before. The last application of the caustic appeared so entirely to remove the irritability of the stricture, that there was no further indication for its employment, and, on the 7th of May, I was enabled to pass, with facility, a No. 12 sound. I have since passed

a No. 13, which is of the natural size of the urethra. In this case I believe that the stricture has been completely removed by the potassa fusa.

APPENDIX.

REMARKS ON PROFESSOR SYME'S NEW OPERATION
FOR THE DIVISION OF STRICTURE OF THE URE-
THRA BY PERINÆAL SECTION ;
AND ON THE USE OF THE POTASSA FUSA IN THAT
DISEASE.

Republished from the Lancet of Jan. 26, 1850.

BY ROBERT WADE, F.R.C.S.,

SURGEON TO THE WESTMINSTER GENERAL DISPENSARY.

IN Professor Syme's late *brochure* on Stricture of the Urethra, amongst other observations depreciating the ordinary methods of treatment in that disease, there are some remarks on the use of caustic, which, emanating from such a source, appear to me to be so likely to do harm, by deterring others from the use of a truly valuable remedy,

that I am induced to offer to the profession a few comments upon so remarkable, and, in my opinion, unwarrantable a statement as is contained in the following passage :—"With regard to the use of caustic for the cure of stricture, it must be obvious that all which has been said as to the injurious effects and dangerous consequences of introducing the most simple dilating instruments into the urethra, will apply with tenfold force to the employment of bougies, 'armed' with escharotic substances, or any other apparatus constructed for the conveyance of such irritating agents. But independently of this objection, I do not hesitate to express my persuasion, that a real organic stricture cannot be removed by caustic; since, even admitting that the agent could be accurately applied, the destructive effect of the nitrate of silver is so limited as to be quite inadequate for the purpose; while that of potass is so diffused that, in the event of destroying the stricture, it must cause a worse one, through the unavoidable loss of substance attending its operation, and the consequent contraction in healing. On the whole, it seems more reasonable to conclude, that in the cases of alleged cure by caustic, there was no real stricture in existence, than to suppose that so improbable, or rather impossible, an achievement had been accomplished."—p. 52.

The above statement, from beginning to end, is,

in my judgment, but a mere assumption, wholly unsupported by facts, and which, in many parts, can be refuted by daily observation. In the first sentence we are told of the injurious effects and dangerous consequences resulting from the employment of the most simple dilating instruments; and that these, when armed with escharotic substances, become tenfold more mischievous. Before commenting upon this passage, it is but justice to the author to quote another, from which it would appear that the inferred injurious effects of the treatment of stricture by the bougie, apply more particularly to its employment by others, and not when used by himself, or in the manner which he recommends. We have the author's views of the *modus operandi*, and proper use of the bougie, in the following observations:—

“It is now universally admitted that the bougie acts by exciting a degree of irritation sufficient to induce absorption of the thickened texture, which occasions the contraction and induration concerned in the formation of stricture. To produce this, the instrument should be employed with the utmost possible gentleness—should not be allowed to remain in the urethra more than one or two seconds—and should not be introduced again until the expiry of from two to four days, or rather, until any uneasiness excited by it has completely subsided.”—p. 44.

This is, indeed, a harmless employment of the bougie. But is it an useful one? Is it, in fact, giving the instrument a fair opportunity of accomplishing all that it is capable of doing? I think not. It appears to me, that at the very commencement of the passage just quoted, we have another assumption. Is it, indeed, so universally admitted that the bougie acts by exciting a degree of irritation, &c.? Does the bougie, let me ask, always act as an irritant? If it indeed be so, it must be like blowing hot and cold with the same breath, for the effects of the bougie are frequently most soothing; in fact, allaying irritation in a remarkable degree. In cases of retention of urine, is not the mere pressure of the bougie against a stricture occasionally successful in relieving the patient? And when the point of the instrument can be made to penetrate the obstruction, if retained for a few minutes, the urine will, in general, most assuredly follow the removal of the dilating power. Are these effects to be regarded as simply those of an irritant? Surely there must be some other action of the bougie than that of "exciting irritation, and causing absorption of the thickened texture." Has not the mechanical dilating power of the instrument much to do in so quickly affording relief? If, however, the instrument be not permitted to remain "more than one or two seconds," then, in-

deed, it may possibly have no other action than that of an irritant. In the ordinary treatment of stricture by the bougie, in which it is usually retained from a few minutes to half an hour, according to local and constitutional peculiarities, its good effects have appeared to me to have been produced in a great measure, by its wedge-like dilating power in opening the obstruction, thus causing a more free passage for the urine, consequently lessening the inflammation and irritation at the seat of disease.

The "injurious effects" ascribed to the bougie,—that is, if it be used with due care and gentleness,—I cannot but think are chiefly imaginary; certainly, by the profession generally the treatment of stricture by the bougie is that which is considered as less likely than all others to be followed by injurious consequences. As to the assumed ill effects of the bougie being increased tenfold when armed with escharotic substances; why, almost every experienced surgeon, whatever prejudice he may entertain to the use of caustic for the destruction of stricture, well knows its value in the relief of irritability and spasm. Are not the powerful effects of the nitrate of silver in the relief of irritation and inflammation of other parts universally acknowledged? Why, then, should it be otherwise in stricture? Many others, I think, will, at all events, agree with me that in

such an indiscriminate abuse of caustic as regards its inutility and ill effects in the treatment of stricture, Professor Syme has at least gone a little too far. I have now had full twenty years' experience in the use of the potassa fusa in the treatment of stricture; and instead of finding it to be an injurious agent, it has proved to me of the greatest value in many very difficult cases of urethral obstruction. The result, however, of my observations with regard to the potassa fusa, to nearly the present time, has been so completely stated to the profession in my work on stricture, as to preclude the necessity of any very detailed statement of its effects in the present communication. With regard to Mr. Syme's persuasion that "a real organic stricture cannot be removed by caustic," I can assure him that he was never more mistaken in his life, for many such have been entirely removed by myself by a careful and persevering application of the caustic alkali. As to the assertion of the potassa fusa causing a stricture, all I have to say is, that such an effect can only be produced by a gross abuse of the remedy; and that no injurious consequences have resulted in any single instance of the many hundred in which it has been used by myself. It so happens that, amongst others, I can adduce my personal testimony to the fallacy of the supposition, that the potassa fusa cannot be applied so

as to remove a stricture without causing a worse one, for the Professor's "improbable, or rather impossible, achievement," has actually been accomplished in my own person. I had for some time been troubled with a stricture at the bulb, rather more than half an inch in length, and having a hard gristly feel on the introduction of the bougie. Finding the dilatation to proceed very unsatisfactorily, I had recourse to the potassa fusa; and after four applications of the caustic, the stricture was so completely removed as to admit in a short time the introduction of a full-sized sound, No. 16. This is just five years ago, and there has never been the slightest disposition to a return of the contraction,—a fact of which I have satisfied myself by the occasional introduction of the same sized instrument. Whatever Mr. Syme may think upon the subject, I know from ample experience that the potassa fusa can be safely applied so as completely to remove many strictures; and that in others of a gristly hardness and of more considerable extent, an occasional application of the remedy will often much facilitate dilatation. Let it not, however, be supposed that I either believe or wish to impress others with a conviction, that the caustic alkali is an infallible remedy in stricture; all I mean to assert is, that, when properly used, with due perseverance, it will prove a most valuable agent in the treatment of

urethral obstructions ; and that success will often be obtained in cases of a most unpromising character.

The principal object of Professor Syme's work is the recommendation of an operation for the division of strictures by perinæal section, in cases where, in my judgment, but few experienced surgeons will consider such a proceeding to be justifiable, as in general, success can be obtained by less formidable means. It appears to me, that the author, in his partiality to a new and favourite operation, has made his book, from beginning to end, a piece of special pleading in favour of one particular method of treatment, by an unjust disparagement of all others. The operation recommended for our adoption by Mr. Syme, is described, in the commencement of his work, as "a simple and easy mode" of curing the most difficult cases of stricture of the urethra, the proceeding being nothing more nor less than a complete division of the obstruction by free external perinæal section. At the conclusion of his Treatise, the author observes—"I trust it will appear established—1. That division of a stricture by external incision is sufficient for the complete remedy of the disease in its most inveterate and obstinate form, 2. That in cases of less obstinacy, but still requiring the frequent use of bougies, division is preferable to dilatation, as affording

relief more speedily, permanently, and safely.”—p. 58. Division of a stricture by external incision has usually, I believe, been regarded as justifiable only in cases impervious to instruments, and its performance has at last been undertaken by the best surgeons with reluctance, when, in fact, it has afforded the only means of saving the life of the patient. Mr. Syme’s procedure is thus described—“A small staff, grooved on its convex side, having been introduced, I made an incision in the raphé of the perinæum, from the bulb to the anus, and then feeling for the stricture, which was easily recognised by its surrounding induration, ran the knife fairly through the whole extent of thickened texture. A full-sized catheter was substituted for the staff, and retained for a few days.”—p. 17. After all, then, which has been said in its favour, it appears that this vaunted operation can only be resorted to in strictures where an instrument can be passed through the obstruction; when, in fact, that which is usually regarded as the greatest difficulty in a bad case has been overcome. It would appear, however, that Mr. Syme does not believe in the existence of a stricture impermeable to instruments, as is evident in the following words:—“The operation by external incision hitherto employed has been resorted to as the refuge of awkwardness or failure in the introduction of instruments, there being no

truly impermeable stricture, while the one now advocated can be accomplished only by steps requiring the nicest manipulation.”—p. 57. How the latter part of this statement can be reconciled with a former one, in which the same operation is described as “simple and easy,” it is rather difficult to imagine. If it were not for the illiberal reflection conveyed in the first part of this passage, our admiration would, indeed, be raised to a high degree for the man whose manual dexterity enabled him to succeed in overcoming obstacles which had frequently foiled the ablest surgeons in the metropolis. What the profession generally may think of this gentle hint of their awkwardness may be readily imagined; as for myself, my consolation is, that such surgeons as Sir B. Brodie, Mr. Guthrie, and the late Mr. Aston Key, amongst others, have occasionally met with cases that defied all their skill to pass an instrument through the stricture; and in which the operation by external excision has been practised by them as the best means of effectually affording relief.

Before submitting our stricture patients to the operation recommended by Mr. Syme, it will be as well to inquire, first, if the operation be, in reality, always a safe one; secondly, if it can, as we are informed, be relied upon any more than other operations by perinæal section, as a perma-

nent cure of the worst cases of stricture : lastly, under what circumstances the procedure may be conscientiously adopted ;—is it, in fact, ever necessary ? In one of Mr. Syme's cases, we are informed that the operation proved all but fatal ; although, with some little inconsistency, the author elsewhere assures us it is perfectly safe.

Within the last month, I witnessed the performance of this operation by a gentleman, who, if report speak truly, is quite as dexterous an operator as Professor Syme. No operation, I believe, could have been more skilfully performed. And what was the result ?—the death of the patient, fifteen days after he had been cut. He was about thirty-five years of age, and his constitution appeared good. But little blood was lost during the operation, although some slight hæmorrhage occurred afterwards, at intervals, but, I was informed, not to any considerable amount. Rigors occurred on the fourth day ; symptoms of general constitutional irritation supervened ; the poor man became gradually weaker, and died about a fortnight after the performance of an operation which the profession is now called upon to adopt as one of entire safety ; and that in cases which can, I believe, almost invariably be relieved by other means not endangering life. As to this operation ensuring a permanent cure of stricture, I think that, at present, we have not sufficient evidence

to warrant any such conclusion, as most of the instances in which it has been performed are of too recent a date to enable us yet to form a satisfactory judgment upon this subject. We are, indeed, assured by Professor Syme, that in one case where division was performed by him, five years ago, there has been no return of the contraction. Has not, however, a similar favourable result been obtained in impervious strictures, where the thickened tissues forming the obstruction have been freely and properly divided by perinaeal section?

It is true that in many cases the obstruction has eventually returned, but, in several others, we have good testimony that the result has been entirely successful. I know of one case in which division of an impervious stricture, by perinaeal section, was performed, more than a twelvemonth ago, by a very excellent surgeon, and the result, at present, promises to be successful. It must be admitted, that division of a stricture is much more easily and quickly accomplished when a grooved director can be passed through it as a guide, than in cases where the section has to be made without such a director; but I am by no means convinced that the disease will be less likely to return in the former than in the latter instance, that is, if both operations be equally well performed. In Sir B. Brodie's method of

proceeding, by perinaeal section, the new passage through the obstruction must have been made nearly as much in the natural course of the urethra as it would have been had the stricture admitted of the introduction of a director as a guide to the knife; and if I mistake not, the result was successful. Mr. Guthrie has published some instances of impervious strictures, in which he had successfully divided the obstruction by perinaeal section. It is true that in Mr. Syme's operation the central line of the urethra is more certainly preserved than when no director can be passed; but, after all, the natural urethral membrane can form but a very small portion of the enlarged passage through the obstruction, the greater part of the new channel being necessarily formed by the thickened tissue at the seat of disease.

Time only can, however, decide the question whether Mr. Syme's operation, in instances of pervious strictures, be attended with more lasting success than when division is skilfully accomplished in impermeable cases, as practised by Sir B. Brodie, Mr. Guthrie, Mr. Fergusson, and others. The most important point, however, for consideration, regarding Mr. Syme's operation, is as to the absolute necessity for its performance. When an instrument can be passed through a stricture, is it possible or not to afford relief by less hazardous

measures, such as are attended with no risk of a fatal result? Whatever Mr. Syme may think of the *potassa fusa*, I can assure him that, with but few exceptions, it has enabled me to succeed in the dilatation of impervious strictures; and that in no instance of permeable obstruction have I ever yet failed in widening the passage safely and effectually by a careful use of the caustic alkali. I have at the present time under my care, a gentleman who had long suffered from a stricture at the bulb. Two years before his application to me, a very small silver catheter had been passed. The operation caused a little bleeding, and severe pain, followed by rigors and considerable constitutional disturbance. Several subsequent attempts to get an instrument through the stricture were made unsuccessfully by the same gentleman, a hospital surgeon of acknowledged skill. This patient came to me for the first time on the 8th of October last, when, finding it impossible to get an instrument of any kind into the stricture, I applied the *potassa fusa*, and was obliged to repeat its application seven times before getting through the stricture, which was at the bulb, and nearly an inch in length, feeling hard and gristly on the introduction of the bougie. Three more applications of the remedy were required before the stricture became dilatable. I can now pass a full-sized sound, and nearly the whole of the

thickened tissue has disappeared. Within the last six weeks, two surgeons, at my recommendation, have had recourse to the *potassa fusa* in cases of a very troublesome character, and impervious to instruments. Both of them yielded to four applications of the caustic alkali; although, in one, from the failure of all the means previously tried, the gentleman, a hospital surgeon of great skill, who had charge of the patient, had resolved to divide the stricture by perinæal section.

If Professor Syme's new operation for the division of stricture had been, in reality, the simple and safe one it is represented to be, the assumptions, arguments, and unjust reflections upon others which his work contains would have remained unnoticed by me, as I should have been content to leave them to the good taste and judgment of the profession for their due and proper appreciation. But have we not already had convincing proofs that the operation is not always a safe one? Witness one of Mr. Syme's own cases, in which he acknowledges the result to have been all but fatal. Witness one of the very first cases in which the operation has been performed in London, when although in that instance the operator was one of the most expert in town, yet the patient died fifteen days afterwards. Well knowing the influence that Mr.

Syme's name will be likely to have in inducing others, more particularly the less experienced members of our profession, to adopt any measure receiving his sanction and strong recommendation, I have endeavoured conscientiously to discharge a public duty, by offering such observations as appeared to me the most likely to cause some little reflection before having recourse to the new procedure. Previous to the performance of an operation for the division of a stricture, either permeable or impermeable, let me earnestly entreat every surgeon, in justice to his patient, first to give the potassa fusa a fair trial, when, if after due perseverance in its use, that remedy should fail, then, but not until then, in my opinion, will such an operation be justifiable. It is surely a good maxim in surgery, that when relief can be equally obtained by two methods, the one imperilling life, the other not, the safe means should always be chosen. Whatever may be the effect of these observations, I shall have the consolation of knowing that at all events one warning voice has been raised against the operation for division, by perinæal section, of a permeable stricture—a proceeding that, as it appears to me, will very rarely be justifiable.

NOTE.

Since the publication of my remarks on Professor Syme's Treatise on Division of Strictures of the Urethra by perinæal section, I have heard of three cases so treated, one permeable, the others impermeable, which have proved fatal. These cases have all occurred in the metropolis within the last two or three months in the hands of good operators, and must surely carry conviction to every unprejudiced mind that division of strictures by perinæal section, whether permeable or impermeable, should ever be regarded as a proceeding attended with considerable hazard. The more I reflect upon this operation, at present unfortunately too much the fashion, the more convinced am I that its performance can only be justifiable in cases of immediate or impending danger, and that it cannot be much depended upon as a permanent cure of bad cases of urethral obstructions. Experience has proved that old hard strictures when divided by perinæal section have generally evinced a strong tendency to recontract after the lapse of a few months or years, and it has been often found impossible to prevent their return, notwithstanding a continued and persevering use of the bougie. Every fact, indeed, connected with the performance of this operation appears to me to lead inevitably to this conclusion, that it should only be resorted to as a last resource after the failure of all other means unattended with risk to life, except in those cases where the bladder must be relieved at all hazards.

April 8th, 1850.

THE END.

LONDON:

G. J. PALMER, PRINTER, SAVOY STREET, STRAND.

